

South Carolina Coastal Zone Management Program

Section 309 Assessment and Strategy 2006 – 2010

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Office of Ocean and Coastal Resource Management
SC Department of Health and Environmental Control



Acronyms

BMP	Best Management Practice	GIS	Geographical Information System
CAIP	Coastal Access Improvement Program	GPS	Global Positioning System
CELCP	Coastal and Estuarine Land Conservation Program	LIDAR	Light Detection and Ranging
CCF	Council on Coastal Futures	NERR	National Estuarine Research Reserve
CCU	Coastal Carolina University	NOAA	National Oceanic and Atmospheric Administration
CMP	Clean Marina Program	NOEP	National Ocean Economic Program
CNP	Coastal Nonpoint Program	OCRM	Office of Ocean and Coastal Resource Management
CZM	Coastal Zone Management	OCS	Outer Continental Shelf
DHEC	Department of Health and Environmental Control	OSDS	On-site Disposal Systems
DNR	Department of Natural Resources	SAMP	Special Area Management Plans
EFIS	Environmental Facilities Information System	SPA	State Ports Authority
EPA	Environmental Protection Agency	USC	University of South Carolina
EQC	Environmental Quality Control	USCG	United States Coast Guard
FEMA	Federal Emergency Management Agency	USGS	United States Geological Survey

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INTRODUCTION

Background

Section 309 of the Coastal Zone Management Act, as amended in 1990 and 1996, establishes a voluntary coastal zone enhancement grants program for states with federally approved Coastal Zone Management (CZM) Programs. This grant program makes federal funds available to states to encourage the development of programmatic changes within specific enhancement areas of the coastal zone. The nine enhancement areas include:

- Public Access
- Coastal Hazards
- Ocean Resources
- Wetlands
- Cumulative and Secondary Impacts
- Marine Debris
- Special Area Management Plans
- Energy and Government Facility Siting
- Aquaculture

Programmatic changes include changes to state enforceable policies and authorities, as opposed to changes in the way states implement the CZM program.

Program changes include:

- A change to coastal zone boundaries;
- New or revised authorities, including statutes, regulations, enforceable policies, administrative decisions, executive orders, and memoranda of agreement;
- New or revised local coastal programs and implementing ordinances;
- New or revised coastal land acquisition, management, and restoration programs;
- New or revised SAMPs or plans for Areas of Particular Concern; and,
- New or revised guidelines, procedures and policies which are formally adopted by the state and provide specific interpretations of enforceable CZM program policies.

Every five years, states participating in this grant program are required to provide an assessment of the projects that have been conducted in these enhancement areas. In March 2005, NOAA provided updated guidance for conducting the assessment including the specific enhancement areas, recommended format of the document, and a series of assessment questions for each enhancement area.

Along with the assessment, each state must also provide an implementation strategy for programmatic changes for the upcoming five-year period. The strategy identifies priority issues in specific enhancement areas, and outlines action plans to address program changes. The strategy is submitted to NOAA for evaluation and federal approval, and for ranking of state funding proposals.

This document is a combined Section 309 Assessment and Strategy. Each enhancement area assessment includes a description of projects undertaken from 2001 through 2005, remaining issues and needs, and a priority ranking. For two “high priority” enhancement areas (Coastal Hazards and Ocean Resources), multi-year strategies follow the assessments and outline long-term strategies and potential program changes

associated with these issues. The strategies also include estimated costs, timelines, and work plans for achieving those program changes. Development of DHEC-OCRM's strategies for 2006 – 2010 was based on input from both staff and stakeholders. When possible, efforts were made to coordinate the development of this strategy with DHEC-OCRM's five-year Operational Plan and the recommendations in the final report of the Council on Coastal Futures. Both of these documents complement the Section 309 goals and NOAA's National Coastal Management Performance Measurement System.

Public Participation

In order to facilitate gathering input from a wide range of interest and expertise, DHEC-OCRM convened a panel of scientists, researchers, coastal managers, local planners, environmentalists and developers for a stakeholders meeting on October 27, 2005. The meeting involved significant dialogue and provided insight as to the emerging issues that the South Carolina coast will face over the next five years. A list of participants and a matrix of information gathered from this meeting and from DHEC-OCRM staff is provided in the Appendix. This input was incorporated as appropriate.

South Carolina's 309 Assessment and Strategy was provided to NOAA for initial comment in February 2006. These comments were incorporated into the final draft, which was placed on public notice in January 2007 for 30 days. The draft document is posted on the DHEC-OCRM Web site and was mailed to interested citizens, organizations and agencies. Comments received during the open comment period will be incorporated, as appropriate, into the final document.

SUMMARY OF PAST 309 EFFORTS

Council on Coastal Futures Implementation

In 2002, the South Carolina coastal management program marked its twenty-fifth anniversary. This anniversary served as an opportunity to evaluate the progress made and lessons learned in managing SC's coastal resources since enactment of the 1977 Coastal Tidelands and Wetlands Act. The Council on Coastal Futures (CCF) was charged by the DHEC Board with documenting priority issues and concerns and recommending actions, programs and measures to improve the effectiveness of the SC Coastal Zone Management Program.

After 14 months of work and extensive public input, the CCF completed a final report (www.scdhec.gov/environment/ocrm/pubs/docs/CCF/ccf_final.pdf) containing 18 recommendations focused on the need for improved management of three priority issues:

- development and growth,
- habitat and wetlands protection, and
- water quality and stormwater.

**Council recommendations that were implemented through 309 efforts are marked with an asterisk.*

Coastal Indicator Tracking System

DHEC-OCRM was one of six states selected to work with NOAA-OCRM on developing the National Coastal Management Performance Measurement System. These measurements were developed to document program effectiveness and validate continued funding of the CZM program. As part of this work, DHEC-OCRM helped NOAA determine sources of data, document obstacles and estimated costs for gathering data, and evaluate relevance. This work was completed in January 2005.

DHEC-OCRM is modifying the agency's existing data management system, the Environmental Facilities Information System (EFIS), to help track these measures. Baseline data is currently being obtained, and adjustments will be made as necessary.

Coastal Economic Analysis

DHEC-OCRM partnered with Sea Grant to commission a study on the contributions of the coast to the South Carolina economy. The Clemson University Regional Economic Development Research Laboratory completed a report in 2002 that provided key findings for the eight coastal counties including rapid growth in both population and new jobs. The report concluded that the coast dominated the state in most leading economic measures. The complete report can be viewed online at http://cherokee.agecon.clemson.edu/redrl_rpt9.pdf

Cumulative and Secondary Impacts

*Septic System Inspection Maintenance and Ordinance Development

DHEC-OCRM supported community-based efforts to manage nonpoint source pollution including on-site disposal system (OSDS), or septic system, inspection and

maintenance. During this Assessment, the City of Folly Beach passed a comprehensive OSDS management ordinance. The ordinance requires routine maintenance, and DHEC permits and final approval for any new construction, renovation or change in occupancy. Additionally, it requires a baseline inspection of existing OSDS prior to the sale of a structure. The Sewee to Santee area has developed a similar ordinance within the Town of McClellanville that is currently under review. A comprehensive OSDS Web page was created that serves as a resource for information on OSDS inspection and maintenance, links to information on projects, and highlights future funding opportunities. The Web site can be accessed at www.scdhec.gov/environment/ocrm/plan_tech/septics.htm

***Compliance Inspection Initiative**

DHEC-OCRM implemented a stormwater maintenance inspection program to conduct compliance inspections of previously permitted stormwater systems. During this Assessment period, DHEC-OCRM's historical stormwater permitting information was analyzed and work was conducted to link the DHEC EFIS permit tracking system with the agency's GIS. Numerous previously permitted development sites were inspected to ensure compliance with necessary maintenance requirements and with any archaeological/historical requirements. Additionally, an outreach program continued to inform communities, design professionals and others of the importance of maintaining and inspecting stormwater BMPs. This comprehensive review of compliance will result in a report detailing methods to improve operations and compliance across all permitting and certification programs, as well as recommended improvements to standard operating procedures for conducting, recording and reporting compliance on permits and certifications issued by DHEC-OCRM.

***Updated Stormwater BMP Manuals/Field Manuals**

A revised stormwater BMP manual was produced that includes native plant lists for wetland applications and bioretention applications, temporary and permanent seeding rate tables, standard details and supporting technical information for water quality BMPs and construction BMPs. As a supplement to the BMP manual, a statewide stormwater management and sediment/erosion control field manual was produced. This field manual includes information on innovative techniques, installation and maintenance specifications, as well as erosion prevention and sediment control BMPs. The manual contains preventive measures and a troubleshooting guide so solutions can be quickly identified. A standardized set of symbols for legends are included creating a uniform methodology for consultants when submitting engineering plans for permitting.

Marine Debris

Abandoned Vessel and Marine Debris Removal Program

DHEC-OCRM implemented a marine debris removal project for the Charleston estuary and the Beaufort/Hampton/Jasper county areas. Seventeen sites were cleaned of debris in Charleston waters. Inventory and assessment data has been completed for the Beaufort area and 26 sites have been identified for debris removal. Additional program information can be found under the Enhancement Area Analysis for Marine Debris.

Dock Construction and Maintenance Standards

A comprehensive document detailing dock construction standards has been developed to help guide citizens through the dock permitting process, and to provide information on standards for dock construction and maintenance.

Special Area Management Plans

The Cooper River Corridor SAMP developed recommendations that address balancing the multiple uses of this area and limiting potential conflict. The SAMP focuses on cultural resources management, water-based recreation, and natural resources management, and ensures the multiple uses of the Cooper River area can be maintained. This SAMP is an implementation of the final recommendations of the Charleston Harbor Project SAMP from the subgroups for each Cooper River Corridor focus area.

The Murrells Inlet SAMP, currently under development, focuses on water quality in the Inlet. The SAMP will develop a demonstration project to treat stormwater run-off before it reaches the inlet, further support a program to recycle oyster shells in the area, develop and implement an education program about resource protection measures to improve water quality, and address high-impact run-off in the watershed including impervious surface coverage.

ENHANCEMENT AREA ANALYSIS

PUBLIC ACCESS

Section 309 Programmatic Objectives

- I. Improve public access through regulatory, statutory, and legal systems.
- II. Acquire, improve, and maintain public access sites to meet current and future demand through the use of innovative funding and acquisition techniques.
- III. Develop or enhance a Coastal Public Access Management Plan which takes into account the provision of public access to all users of coastal areas of recreational, historical, aesthetic, ecological, and cultural value.
- IV. Minimize potential adverse impacts of public access on coastal resources and private property rights through appropriate protection measures.

Resource Characterization

Extent and Trends in Providing Public Access (publicly owned or accessible):

- 1. Provide a qualitative and quantitative description of the current status of public access in your jurisdiction. Also, identify any ongoing or planned efforts to develop quantitative measures to assess your progress in managing this issue area.**

DHEC-OCRM utilizes several mechanisms to promote and improve public access within the eight-county coastal zone. In 2003, DHEC-OCRM Planning staff conducted a review of the Beachfront Management plans for thirteen county and municipal areas, in part to evaluate the status of public beach access. The review found that most communities were either in compliance or had made significant efforts to address the issues raised in the 1997 Beachfront Management plan reviews. These issues included:

- inadequate inventories of public beach access sites and parking areas,
- necessary improvements and enhancements to existing access sites,
- unmarked or inadequate parking at public access sites,
- encroachment by private property owners into public parking areas, and
- limited handicapped accessible walkovers.

Communities, such as Edisto Beach, increased public access sites, improved existing sites with dune walkovers and handicapped access, notified property owners of encroachments, and adopted local Beach Access Management Plans. Folly Beach installed over 35 signs with information on beach access and rules and regulations, as well as issuing tickets for encroachment. The City also initiated a MAP (More Access and Parking) program that will address handicapped access and other objectives to improve public access. Georgetown County performed local surveys of public parking availability and evaluated access areas in need of improvement. The County prepared a 5-year Beach Improvement Plan and utilized local funding to reconstruct crossovers

and handicapped ramps, improve parking lots, and adequately mark beach access sites.

DHEC-OCRM often supports municipal and countywide improvements and initiatives through the Coastal Access Improvement Program (CAIP). CAIP is funded annually with critical area permitting fees, and awards are made to local governments for public access improvement projects. Over the past five years, 24 projects have been funded under CAIP. These projects include activities such as additional or improved beach walkovers and facilities, construction of a new public waterfront park, and construction of a new public pier.

In addition to beachfront access, DHEC-OCRM supports the acquisition of properties for use as public parks, nature preserves, and coastal trails. Through NOAA's Coastal and Estuarine Land Conservation Program (CELCP), DHEC-OCRM has partnered with other state and federal agencies, as well as numerous conservation organizations, to prioritize land acquisition projects. Any property acquired through CELCP funding must be owned by a public entity and, in most cases, must provide public access. Through the Cooper River Corridor SAMP, DHEC-OCRM has assisted Berkeley County with the development of a canoe and kayak trail and a living history village, both of which are open to the public. DHEC-OCRM continues to coordinate with the North Inlet/Winyah Bay and ACE Basin National Estuarine Research Reserves and supports their efforts to acquire additional core and buffer properties.

DHEC-OCRM has engaged in several efforts to quantitatively measure the status of public access and gauge progress in improving the number and quality of access sites. DHEC-OCRM is currently undertaking a recreational needs analysis, which will provide comprehensive baseline data on public access sites, as well as information on the demand for beach access within the coastal zone. As part of this effort, DHEC-OCRM is forming a consortium of representatives from municipal and county governments, which will improve data sharing and provide a mechanism for routine updates on public access and other activities. Further, DHEC-OCRM is making improvements to its Environmental Facilities Information System (EFIS) to improve its ability to track permits for public access-related activities.

2. Briefly characterize the demand for coastal public access within the coastal zone, and the process for periodically assessing public demand.

Given South Carolina's increasing coastal population, the demand for adequate public access will likewise increase. The U.S. Census in 2000 showed substantial increases in the populations of the eight coastal counties. For example, the populations in Beaufort and Horry Counties grew by 39.9% and 36.5%, respectively, from 1990 to 2000 (U.S. Census Bureau, 2005). The following facts indicate the demand for a variety of coastal public access in South Carolina:

- According to the S.C. Statistical Abstract, the highest ranked locations for state park visitation were all within the coastal zone. Listed in order, Hunting Island State Park, Myrtle Beach State Park, Huntington Beach State Park, and Edisto Beach State Park had the highest number of total visitors for Fiscal Year 2002-2003 (S.C. Statistical Abstract, 2005).
- With over 383,000 registered boats, South Carolina ranked 10th in the nation in 2002 for the total number of registered watercraft (USCG, 2002).

- In 2003, visitation to beach areas, historic sites, national and state parks, and for water/boating activities accounted for 82% of the visitation to Myrtle Beach and the Grand Strand; 63% of the visitation to Historic Charleston and the resort beaches; and 75% of the visitation to Hilton Head and Lowcountry resort islands (S.C. Statistical Abstract, 2005).

Public demand for access to recreational related activities is periodically assessed through the State Comprehensive Outdoor Recreational Plan (SCORP), conducted by the state's Parks, Recreation and Tourism agency. This comprehensive plan is conducted every five years and examines the state's recreational resources, analyzes demand for opportunities and develops programs to address needs and issues. Additionally, DHEC-OCRM is currently conducting a recreational needs assessment to evaluate current visitor trends and projected user needs at beachfront access sites. Public demand will be gauged by a variety of methods, such as surveys, interviews, and on site observation. DHEC-OCRM is also involved in a collaborative effort with the coastal counties to assess boating needs. Both projects will provide critical information to track indicators for the public access performance measure.

Though information gained from the assessment processes listed above provides state and local agencies valuable information, a more comprehensive evaluation of supply and demand specific to the coastal zone is needed to accurately access needs for recreational opportunities other than beach and boating access.

According to the SCORP, the percentage of participation in beach related activities continually ranks in the top five recreational pursuits for state residents and visitors, and it identified increasing public beach access as a priority. However, the plan also showed that participation in activities such as visiting historical sites, boating, fishing and hiking are on the rise. Participants at a SCORP meeting in Charleston ranked the option of increasing development of urban hiking, biking or walking pathways, along with purchasing open space for recreational uses higher than that of increasing beach access.

3. Identify any significant impediments to providing adequate access, including conflicts with other resource management objectives.

The availability of potential public access sites, as well as the cost associated with acquiring these areas, often impedes the development of new public access sites in South Carolina. Well-sited access points along the coast are often located where water access is available and in urbanized areas where demand is high. As coastal population increases, so does the demand for coastal residential properties. In 2004, the insured value of coastal property for the state was \$149 billion, roughly 26% of the state total, ranking South Carolina 8th in the nation. Since 1988, South Carolina's coastal insured property value has increased 377% (SC Department of Insurance). The value of property in Charleston, Berkeley and Dorchester Counties increased 120% during 1996-2005 (Charleston Metro Chamber of Commerce); and values in Horry and Georgetown Counties have increased 115% in the same timeframe (Myrtle Beach Chamber of Commerce). Residential property demands and their increased values are outweighing public entities' ability to pay for recreational opportunity sites.

Coastal managers in South Carolina are becoming concerned about the conversion of areas that were once sites of public access or traditional water-dependent activities to

private and residential uses. This change of use is occurring along the coast in urbanized areas where increasing property values have skyrocketed, and is evident in areas like Shem Creek in Mt. Pleasant. Once a traditional working waterfront of commercial shrimping fleets and seafood processors, this area is now dominated by restaurants, single family homes, and is slated for a 160-unit condominium development. Additionally, traditional recreational waterfronts such as marinas are being converted to “dockuminiums” or privately owned slips, thus limiting access to owners or exclusive members.

Existing beachfront public access sites are actively protected and enhanced throughout the coast; however, high demands and over-use at sites can result in conflicts among coastal residents and visitors, including competing uses, crowding, encroachment, traffic, and the increased potential for littering and other pollution. Such conflicts have occurred in several local communities, primarily involving private property owners and off-street parking for day visitors.

Competing use issues are also evident at non-designated points of access or sites that have been designed for one specific use. State or county bridges are often used for fishing activities because of their convenient, free access to water. However, these sites are not intended for this use and often present safety concerns to both the fisherman and driver. Similarly, boat landings are specifically designed for launching and temporary docking of recreational vessels. Conflicts have occurred at many county landings where fishing activities have interfered with the ability of boater to launch and maneuver safely.

Public docks, piers, and boat landings often impact valuable shellfish beds, resulting in economic impacts for shellfish harvesters who hold leases or for recreational harvesters. This issue is most evident in populated areas of Charleston and Beaufort counties where residential docks are more prevalent and shellfish areas more abundant. South Carolina’s coastal managers must weigh these impacts and the need to protect valuable coastal resources against the need to provide additional public access.

4. Please explain any deficiencies or limitations in data.

Since the baseline data from the recreational needs analysis is not complete, the inventory from the county and local governments is approximate. The beach/shoreline access data was obtained from the beachfront management plans on file with DHEC-OCRM; however, DHEC-OCRM has not received satisfactory responses from several communities regarding public access improvements. The consortium, mentioned previously, will address these concerns by requiring routine Web-based updates on any public access-related activities.

Access Type	Current Number(s)	Change Since Last Assessment
State/County/Local Parks (# and acres)	9 State Parks in the coastal counties = Acreage not known 85 County/Local Parks = Acreage not known	
Beach/Shoreline Access Sites (#)	639 <i>Note: Numbers in this section are comprehensive and include all beach access sites for the state. Most beach access sites are designated right-of-ways or street ends, and include dune walkovers. These numbers are also included in specific sections below.</i>	4 – Myrtle Beach 20–North Myrtle Beach 3 – Edisto 6 – Folly
Recreational Boat (power or non-power) Access Sites (#)	~155	~20 new
Designated Scenic Vistas or Overlook Points (#)	Not available	
State or Locally Designated Perpendicular Rights-of-Way (i.e. street ends, easements) (#)	259 <i>Note: Most beach access sites are designated right-of-ways or street ends, and include dune walkovers. Numbers in this section are included in the sections for Beach Access Sites and Dune Walkovers.</i>	6 – Folly Beach
Fishing Points (i.e. piers, jetties)	40 (10 Oceanfront)	
Coastal Trails/Boardwalks (# and miles)	124 (includes hiking, interpretive, canoe, and horseback trails and boardwalks) totaling 815 miles	
ADA Compliant Access (%)	34= 5%	1 – Edisto 1 – Georgetown 2 – Folly
Dune Walkovers (#)	320 <i>Note: Most dune walkovers are at beach access sites that include designated right-of-ways or street ends. Numbers in this section are included in the sections for Beach Access Sites, and State or Locally Designated Perpendicular Rights-of-Way.</i>	3 – Edisto 6 – Folly
Public Beaches with Water Quality Monitoring and Public Notice (% of total beach miles) and Number Closed due to Water Quality Concerns (# of beach mile days)	126 sites sampled bimonthly from May – October. Horry County sites sampled weekly. (% of beach miles not available) 2 Swimming Advisories but no beach closures	
Number of Existing Public Access Sites that have been Enhanced (i.e. parking, restrooms, signage)	146	

5. Does the state have a Public Access Guide or website? How current is the publication or how frequently is the website updated?

The most recent Public Access Guide was produced in 2000 and is available in hard copy and on the DHEC-OCRM Web site (<http://www.scdhec.gov/environment/ocrm/pubs/general.htm>). Once the current public access inventory is completed, an updated Web page listing public access sites will be incorporated into the DHEC-OCRM Web site. Information on state and county parks is available through the SC Department of Parks, Recreation, and Tourism and individual county Web sites, respectively. Most county Web sites also provide information on public boat landings and other public access points within that particular county. The SC State Trails Program Web site (<http://www.sctrails.net/trails/>) provides current information on all nature trails within the state. The DNR maintains a list of coastal boat landings and piers by county and makes this information available on the Saltwater Recreational Fisheries Web site (<http://saltwaterfishing.sc.gov/marinaslandingspiers.html>).

Management Characterization

For each of the management categories below, identify significant changes since the last assessment. For categories with changes:

- Summarize the change
- Specify whether it was a 309, 306A, or other CZM driven change and specify funding source
- Characterize the effect of the changes in terms of both program outputs and outcomes

Categories:

1. Statutory, regulatory, or legal system changes that affect public access

No regulatory changes have occurred within DHEC-OCRM; however, local governments have adopted public access ordinances and plans since the last assessment.

Folly Beach hired a Code Enforcement officer to address encroachment issues associated with public beach access sites on the island. The city also instituted a More Access and Parking (MAP) program that resulted in additions to public access parking and improvements to public walkovers. Horry County passed an ordinance prohibiting overnight parking at all beach access sites, including street ends, thus restricting encroachment by adjacent private property owners.

2. Acquisition programs or techniques

The Coastal Access Improvement Program (CAIP) is funded with critical area permitting fee money and is an eligible activity under Section 306A. Acquisition is also possible via CELCP funding from NOAA.

In April 2002, SC Code of Laws, Title 48 - Environmental Protection and Conservation was amended to enact the "South Carolina Conservation Bank Act" for the purpose of making grants and loans to public or private entities to acquire interests in real property worthy of conservation. This act also provided for the governance of the

bank and established criteria for eligibility. Funding for projects became available in July 2004 and since that time the Bank has invested \$7.4 million in protecting properties in the eight coastal counties through fee simple transactions or conservation easements.

Land acquisition programs at the county level were also implemented during the last assessment period. In 2000, Beaufort voters passed a \$40 million bond issue establishing the Rural and Critical Lands Program designed to buy greenspace in Beaufort. The program uses local taxes to purchase and preserve threatened parcels of lands throughout the county. To date, Beaufort County has invested nearly all of the \$40 million and has acquired approximately 120 acres of historic property, 9,000 acres for preserves/passive parks and over 600 acres in conservation easements. Charleston County voters passed a Transportation (Half-cent) Sales Tax in 2004. Funds raised from this tax will support improvements to roads and public transportation, but also provides dollars for greenbelt projects including land acquisition. A Greenbelt Advisory Board was created to make recommendations on expenditures for greenbelt projects. Steps taken to date include approving a Conceptual Greenbelts Vision Map, adopting a definition of Urban and Rural Areas, and adopting a Statement of Intent for Allocation of Funds to the Urban and Rural Areas. An estimated \$5.9 million has been budgeted for greenbelt projects beginning in Fiscal Year 2006.

3. Comprehensive access management planning (including development of GIS data layers or databases)

As part of the CELP planning process, all protected lands are mapped on DHEC-OCRM's GIS. Additionally, beach and boating access sites, trails and other publicly accessible sites are mapped and available via various websites as mentioned previously.

4. Operation and maintenance programs

DHEC-OCRM does not own any public access lands or facilities and therefore has none of these programs. No other state or local operation and maintenance programs were supported through CZM funding, nor do they represent any significant changes since the last assessment.

5. Funding sources or techniques

Increased funds have been provided for the CAIP; however, no new funding sources have been identified.

6. Education and outreach (access guide or website, outreach initiative delivered at access sites, other education materials such as pamphlets)

DHEC-OCRM is in the process of conducting a beach access needs and boating needs analyses. The most current public access guide was created in 2000 and can be found on the DHEC-OCRM Web site at http://www.scdhec.gov/environment/ocrm/pubs/docs/beach_access.pdf.

7. Beach water quality monitoring and/or pollution source identification and remediation programs

DHEC-EQC in cooperation with EPA and local governments conducts beach water quality monitoring as well as other water quality monitoring and remediation programs. For further information go to <http://www.scdhec.gov/eqc/water/>.

Conclusion

1. Identify priority needs or major gaps in addressing the programmatic objectives for this enhancement area that could be addressed through a 309 Strategy.

During a recent 309 Strategy meeting, stakeholders and staff identified the following priority needs:

- Gather sufficient information to determine impacts and potential conflicts so that access will be well planned, meet public needs, and avoid conflicting uses and unnecessary impacts.
- Improve and increase the number of access points that are handicapped accessible.
- Identify traditional use areas so that historical and cultural uses aren't compromised and provide incentives for the preservation of traditional uses to avoid conversion for private use.
- Improve access for other resources rather than focusing on beachfront areas and provide alternative access such as bike trails.
- Develop a plan to address non-designated points of access that are heavily used but have no regulation.

2. What priority was this area previously and what priority is it now for developing a 309 strategy and allocating 309 funding and why?

<u>Last Assessment</u>	<u>This Assessment</u>
High <u> X </u>	High <u> </u>
Medium <u> </u>	Medium <u> X </u>
Low <u> </u>	Low <u> </u>

Although DHEC-OCRM and partnering agencies still consider public access to be a high priority, this area is considered medium priority for 309 funding over the next five years. Research on recreational and boating needs is currently being funded with other sources and Coastal Access Improvement grants will continue to be funded with state revenues from the Critical Area Permitting program.

COASTAL HAZARDS

Section 309 Programmatic Objectives

- I. Direct future public and private development and redevelopment away from hazardous areas, including the high hazard areas delineated as FEMA V-zones and areas vulnerable to inundation from sea and Great Lakes level rise.
- II. Preserve and restore the protective functions of natural shoreline features such as beaches, dunes, and wetlands.
- III. Prevent or minimize threats to existing populations and property from both episodic and chronic coastal hazards.

Coastal Hazards Characterization

- 1. Characterize the general level of risk in your state from the following coastal hazards:**

Coastal Hazard	Level of Risk
Hurricanes/typhoons	High
Storm surge	High
Flooding	High
Shoreline erosion (episodic or chronic)	High
Sea level rise	High
Subsidence	Moderate
Geological hazards (including earthquakes and tsunamis)	Moderate

- 2. If the level of risk or state of knowledge about any of these hazards has changed since the last assessment, please explain. Also, identify any ongoing or planned efforts to develop quantitative measures for this issue area.**

The risk from geological hazards, namely earthquakes, should be upgraded to moderate given the seismic risk and vulnerability of South Carolina. The Charleston Southern University Earthquake Center noted that due to "...South Carolina's seismic history and current seismic activity, seismologists consider almost half of South Carolina counties as being at high risk for seismic events" (<http://www.csuniv.edu/version3/academics/earthquake/index.asp>). The 1886 Charleston/Summerville earthquake was the largest earthquake in the Southeastern United States, causing approximately sixty deaths and significant damage to the City of Charleston (South Carolina Seismic Network, <http://scsn.seis.sc.edu/>). Today, a similar seismic event would result in extensive damage and potential loss of life given the increased population and infrastructure in the Charleston area. The SC Emergency Management Division has a South Carolina Earthquake Plan to determine emergency operations and response in the event of a major earthquake. This plan can be found at <http://www.scemd.org/library/EQ%20Plan%2003/EQ%20Plan.htm>.

South Carolina has not assessed the impact of sea level rise on coastal communities and critical habitats such as coastal wetlands. As an example, a conservative estimate of potential land loss in the northeastern coastal region of North Carolina over the past 25 years on 1,593 miles of mapped estuarine shoreline is 537 acres per year (Stanley Riggs, *Shoreline Erosion in North Carolina Estuaries*, The Soundfront Series, NC Sea Grant, Raleigh, NC, Pub. UNC-SG-01-11, 68 pp.). An analysis of South Carolina beachfront and estuarine shorelines is necessary to determine if similar risks exist in this state.

DHEC-OCRM has several ongoing initiatives to improve data acquisition and planning for coastal hazards:

- Information on coastal hazards will be collected as part of the NOAA performance measure tracking efforts.
- DHEC-OCRM is acquiring a comprehensive data set for the Critical Area that will include tidal creeks, stormwater ponds, docks, bridges, piers, and marsh vegetation. This data will be acquired from high-resolution (0.25m²) aerial photography obtained by both the DNR and DHEC-OCRM, and can be used for improved assessments of shoreline change.

3. Summarize the risks from inappropriate development in the state, e.g., life and property at risk, publicly funded infrastructure at risk, resources at risk.

Over the past decade, South Carolina's eight coastal counties have experienced rapid growth. This growth has resulted in even greater pressures to develop waterfront properties – not only beachfront, but also along estuarine, riverine, and tidal creek shorelines. At the same time, many of these shorelines are experiencing erosion due to natural (e.g. barrier island migration, sea level rise, coastal storms) and anthropogenic (e.g. jetties, dams, vessel wakes) forces. Scientists are projecting increased rates of sea level rise in response to global climate change. Over the past century, relative sea level rise is estimated between 23-30 cm, and projections range from doubling to even tripling of that rate during the coming century. Neighboring North Carolina has already documented land loss of 537 acres per year for 1,593 miles of shoreline they have mapped. Shoreline erosion is expected to increase as the rate of sea level rise increases, as are the impacts of coastal storms. The coast is considered overdue for a major hurricane strike – the last significant storm impact occurred in 1989 (Hurricane Hugo). While the scientific community has accumulated data that characterize and project these impacts, South Carolina is falling behind in providing this important information to its coastal managers, local agencies and the public. DHEC-OCRM is anxious to gather the data that exist for this state, provide a realistic and clear analysis of current trends and future scenarios, and consider the implications of various policy alternatives.

Management Characterization

1. Indicate significant changes to the State hazards protection programs since the last assessment:

Programs	Status
Building setbacks/restrictions	No change
Methodologies for determining setbacks	No change
Repair/rebuilding restrictions	Change to damage threshold for oceanfront erosion control structures
Restriction of hard shoreline protection structures	Regulatory change on non-beachfront locations
Promotion of alternative shoreline stabilization methodologies	No change
Renovation of shoreline protection structures	Change to damage threshold for oceanfront erosion control structures
Beach/dune protection	No change
Permit compliance	No change
Inlet management plans	No change
Special Area Management Plans	No change
Local hazards mitigation planning	SC Hazard Mitigation Plan
Local post-disaster redevelopment plans	Review of local beachfront mgt plans
Real estate sales disclosure requirements	No change
Restrictions on publicly funded infrastructure	No change
Public education and outreach	Low Impact Development workshop; Alternative BMP workshop
Mapping/GIS/tracking of hazard areas	SC Critical Area change analysis with high resolution, aerial photography; SC-GA Coastal Erosion Study

2. For categories with changes:

- **Summarize the change**
- **Specify whether it was a 309 or other CZM driven change and specify funding source**
- **Characterize the effect of the changes in terms of both program outputs and outcomes**

Building setbacks/restrictions

No change during this period.

Methodologies for determining setbacks

No change has occurred in the methodology for determining beachfront setback lines. The setback line's distance from the baseline varies along the coast and is determined by the annual erosion rate in that particular area. Stable or accreting beaches have a minimum 20 foot setback line, while erosion areas have setbacks of as much as 400 feet. DHEC-OCRM is currently contracting with CCU to analyze historic beachfront erosion data and the findings will be used for beachfront management applications. Section 306 funding was used for this contract.

Repair/rebuilding restrictions

The damage threshold for oceanfront erosion control structures, such as seawalls, changed from two-thirds to one-half in June 2005. For example, if a seawall is more than 50 % destroyed, then it is considered damaged beyond repair and cannot be rebuilt. The damage threshold for houses remains at two-thirds. This change occurred in accordance with the state's Beachfront Management Act, as amended, and was not related to 309 activities. It was scheduled to change in 2005 under the original Act as part of the long-term retreat strategy.

Restriction of hard shoreline protection structures

The ban on new hard shoreline protection structures remains in place for beachfront areas. However, in non-beachfront locations, shoreline stabilization structures are now only allowed if the property owner is losing high ground property [(30-12(C)(1)(c))]. The regulatory change was intended to reduce the hardening of tidal shorelines with unnecessary walls and revetments. The regulation is not new, rather it was changed in June of 2003 by replacing the word "discouraged" with "prohibited". DHEC-OCRM had seen an increase in the number of property owners who wanted to improve and/or raise their yards by using a wall in wetland transitional areas, and DHEC-OCRM took the position that wetland areas should not be impacted for this reason. Property owners are allowed to construct a wall landward of the critical area line. This new regulation was not related to past 309 initiatives or funding.

Promotion of alternative shoreline stabilization methodologies

No change during this period.

Renovation of shoreline protection structures

See section on repair/rebuilding restrictions.

Beach/dune protection

No change during this period.

Permit compliance

No change during this period.

Inlet management plans

No change during this period.

Special Area Management Plans

No change during this period.

Local hazards mitigation planning

The SC Hazard Mitigation Strategy Plan was developed in 2002 by the South Carolina Emergency Management Division, and implements a major statewide program to achieve greater disaster resistance at the community level. This program is designed to encourage local governments to significantly increase their hazard mitigation and post-disaster redevelopment capabilities. DHEC-OCRM reviewed and commented on

the plan prior to implementation. In addition DHEC-OCRM staff participated in local government planning through the Project Impact program. This program, originally sponsored by FEMA, assists local communities in becoming more disaster resistant. Although funding for the national program was discontinued in 2001, Charleston County continues to administer a local Project Impact program (<http://www.charlestoncounty.org/index2.asp?p=/departments/BuildingServices/projectimpact.htm>). The county program performs public education projects to encourage community resiliency to hazard events, including dissemination of information on codes for new construction and retrofitting, supporting teacher and student projects related to hazard awareness, and conducting seminars for the general public and professional service providers. These activities were not related to 309 or CZM initiatives or funding.

Local post-disaster redevelopment plans

Although no program change has occurred regarding the development of local plans, DHEC-OCRM recently reviewed all fourteen of South Carolina's local-level beachfront plans to determine their compliance with the South Carolina Beachfront Management Act. These plans are intended to ensure management of the beachfront area on both a state and local level, and local governments must continue to implement these plans in order to remain eligible for renourishment funding. The plan reviews were not related to 309 initiatives or funding.

The 2003 review of the beachfront management plans found that most communities were either in compliance or had made significant efforts to come into compliance. However, given the increasing risks associated with sea level rise and hurricanes, and the pressure to develop the remaining shorelines of our coast, plans would benefit from improvements through enhancing strategies for meeting the 40-year retreat policy, strengthening coordination of post-disaster recovery activities, and increasing the ability to integrate data and GIS capabilities in the planning process.

Real estate sales disclosure requirements

No change during this period.

Restrictions on publicly funded infrastructure

No change during this period.

Public education and outreach

DHEC-OCRM has sponsored several workshops over the past year that focus on low impact development and alternative BMPs. These workshops targeted local planners, developers, engineers and realtors in order to reach individuals who routinely deal with growth-related issues, including planning for coastal hazards. These workshops were funded with CZM funding, particularly Coastal Nonpoint Program and Section 306.

Mapping/GIS/tracking of hazard areas

DHEC-OCRM is obtaining 0.25 meter resolution aerial photography of the DHEC-OCRM Critical Area, which will be used to assess changes in areas of concern. This imagery acquisition is being funded with Section 306 funding. In addition, Trimble GPS

units were obtained in summer 2005 for use in post-storm field assessments. These GPS units have custom ArcPad screens that display ArcGIS parcel and structure data and allow for more efficient input of information. DHEC-OCRM conducted a hurricane drill in August 2005 and the GPS units were successfully utilized in beachfront structural assessments. These units were also funded with Section 306 funding.

The South Carolina-Georgia Coastal Erosion Study is a collaborative effort between researchers from the USGS, CCU, USC, College of Charleston, and the Sea Grant Consortium aimed at understanding the process of coastal erosion and the factors that affect erosion rates along the SC/GA coasts. A Web site was developed to present the findings of the Coastal Erosion Study to the general public including online maps of the SC/GA coasts, beach cameras, and a listing of the equipment used to collect data for the Coastal Erosion Study. Information on this study can be viewed online at <http://woodshole.er.usgs.gov/project-pages/scarolina/index.html> or via <http://camelot.coastal.edu/>.

3. Discuss significant impediments to meeting the 309 programmatic objectives (e.g., lack of data, lack of technology, lack of funding, legally indefensible, inadequate policies, etc.)

Data Limitations – During a 309 Strategy meeting, stakeholders and staff indicated that the lack of accurate data for coastal elevations and sea level rise impeded planning and modeling efforts related to shoreline change. Historical shoreline aerial imagery archived at DHEC-OCRM also needs to be inventoried and digitized. At the same time, the numbers and trends of shoreline stabilization devices are presently unknown, because: 1) DHEC-OCRM permits were not consistently “coded” as bulkheads, revetments, etc., until 2001; and 2) non-beachfront bulkheads do not require a permit if constructed on the upland component of a shoreline parcel. Another data limitation involves the tracking of beach renourishment projects in South Carolina. To date, no synthesis of beach nourishment impacts (beach and borrow areas), longevity, spatial distribution, etc. have been undertaken, and DHEC-OCRM’s required monitoring conditions have varied from permit to permit.

Technology Limitations – Local and state managers need to be able to visualize shoreline change in relation to local data layers and plans. Currently, hazards data related to shoreline change, topography, flooding projections, natural and cultural resources, and socioeconomic settings are not well integrated in South Carolina. A GIS-based web portal is needed to bring together various data layers in a user-friendly application to allow risk analysis and planning for future coastal hazards.

Inadequate Policies – The SC Coastal Management Program has a number of policies and regulations that influence shoreline development. Most importantly, the state has adopted a policy of “retreat” from eroding beaches. Under the state’s Beachfront Management Act, DHEC-OCRM establishes and periodically revises two lines of jurisdiction for oceanfront property: the “baseline” and the more landward 40-year “setback line.” These lines establish the boundaries for the state’s jurisdiction, and are used to regulate the size and location of new or replacement structures located near the

beach. Seaward of the setback line, new erosion control structures such as seawalls and rock revetments are banned, and new habitable structures are limited in size to 5,000 square feet of heated space. These same lines are used to regulate the repair or reconstruction of existing erosion control structures and habitable structures following a storm. Existing seawalls cannot be rebuilt if the degree of damage to the structure exceeds 50%, while existing habitable structures must be rebuilt farther landward, if possible, when storm-related damage exceeds 66%. In order to enforce these building restrictions DHEC-OCRM must conduct post-storm damage assessments. These damage assessments are based on the pre-storm condition of the structure. In an attempt to document pre-storm conditions, over the years the agency has developed a mix of digital and print photographs of most oceanfront structures in the state. Houses that are presently out of the state's jurisdiction may become jurisdictional if the baseline and setback line are revised landward.

While this framework has been somewhat successful and appears to ensure shoreline retreat, DHEC-OCRM is faced with continuous pressures to allow special exceptions to the baseline and setback restrictions. In addition, local governments can petition the state to have the regulatory baseline moved seaward if the shoreline appears to have stabilized over the course of several years. Once new structures are established in this high-hazard area, there is a greater pressure to reinforce the shoreline through renourishment or other stabilization methods.

There is no similar policy of retreat for non-beachfront shorelines. Developments and alterations are generally not permitted by DHEC-OCRM to encroach into tidal marshes, including the transitional banks of the marshes. However, Critical Area permit applications for bulkheads and revetments along non-beachfront, eroding shorelines appear to be increasing over the past few years, and permits are not required for erosion control devices constructed landward of the "critical line" as defined by the agency. Therefore, the percentage of shoreline that is hardened is presently unknown, and trends are difficult to evaluate because permits were not tracked (or were not consistently tracked) prior to 2001. In addition, nonstructural alternatives for shoreline stabilization exist, but are not currently required by DHEC-OCRM.

Other federal, state, and local laws, regulations, and programs will also influence shoreline development in ways that are not well understood. For example, the Federal Emergency Management Agency has plans to revise flood rate maps in South Carolina through a "Flood Map Modernization Initiative." It is unclear how updated topography, storm surge projections, erosion rates, or other data may influence the National Flood Insurance Program, and in turn, coastal development in South Carolina. The state is also considering an expanded wind insurance "pool" that subsidizes coastal insurance rates. Some local government ordinances may be more restrictive of shoreline developments and alterations (e.g. buffer ordinances vary among coastal counties and municipalities). Finally, market and non-market incentives and disincentives will likely play a key role in future shoreline development and/or retreat options.

The state's Beachfront Management Act, as amended in 1990, directs DHEC-OCRM and the eighteen beachfront local government units to consider many issues related to beachfront development and management. Local governments are encouraged to develop Beachfront Management (BFM) plans that are designed to complement and assist in implementing the policies of the Act. Further, the Act requires that the plans be

reviewed and updated every five years. The reviews are performed to allow for adjustments that may be necessary due to natural events, increases or decreases in erosion rates, man-made actions, and availability of new data. Although the 2003 review of the plans found that most communities were either in compliance or had made significant efforts to come into compliance, these plans could be improved upon and would benefit from coordination and technical assistance from staff. Given South Carolina's priority ranking of coastal hazards, plans should be re-evaluated based on the increasing risks associated with sea level rise and hurricanes, and the pressure to develop the remaining shorelines of our coast. Improvements to the BFM plans could be realized through enhancing strategies for meeting the 40-year retreat policy, strengthening coordination of post-disaster recovery activities, and increasing the ability to integrate data and GIS capabilities in the planning process.

Recently, the program has been under heightened public scrutiny due to proposed encroachments of large-scale developments, swimming pools, septic systems, and individual residences in the beachfront setback area. Renourishment projects continue at a rapid pace, and erosion control devices are increasing along tidal creeks and estuarine shorelines. Natural and socioeconomic data limitations, in concert with complex regulatory and legal issues, result in an unclear understanding of future scenarios, and of our ability to adapt to shoreline change in the coming decades.

Conclusion

1. Identify priority needs or major gaps in addressing the programmatic objectives for this enhancement area that could be addressed through a 309 Strategy.

- Obtain comprehensive coastal data, including LIDAR, remotely sensed imagery, aerial photography, bathymetry data, and coastal ocean physical observations, to improve assessments of past and projected shoreline erosion rates and sea level rise.
- Examine potential impacts of shoreline change on local communities and natural resources.
- Integrate and share data and analyses related to shoreline change in South Carolina.
- Evaluate the effectiveness of the state's "shoreline retreat" policy, and alternatives to armoring non-beachfront shorelines.
- Evaluate influences of non-CZM programs and regulations on shoreline development and retreat, especially the regulatory influences of local government and FEMA.
- Evaluate market incentives and disincentives for shoreline development and retreat, including public and private insurance and subsidies.
- Assist local governments with updating local Beachfront Management Plans.
- Perform a meta-analysis of beach renourishment projects with a focus on project impacts, durations, and trends.

2. What priority was this area previously and what priority is it now for developing a 309 strategy and designating 309 funding and why?

<u>Last Assessment</u>	<u>This Assessment</u>
High <u> X </u>	High <u> X </u>
Medium <u> </u>	Medium <u> </u>
Low <u> </u>	Low <u> </u>

Due to the growing number of renourishment projects, the increasing risks associated with sea level rise and hurricanes, and the pressure to develop the remaining rural shorelines of South Carolina, coastal hazards remain a top priority for the state's coastal zone management program.

STRATEGY

Primary Objective: *Based on comprehensive analyses of natural and socioeconomic conditions, evaluate policy alternatives to address future shoreline change due to erosion, sea level rise, and coastal storms in South Carolina.*

Proposed Program Changes

DHEC-OCRM needs to revisit and update its Shoreline Retreat Strategy under the Beachfront Management Act, as well as its regulations concerning non-beachfront shoreline protection structures. The agency also needs to support an update of local beachfront management plans, which, among other elements, address shoreline retreat strategy and policies for rebuilding after damage from hurricanes.

Strategy Activities

For the next five years, DHEC-OCRM will focus most of its 309 resources on building coastal communities' resilience to shoreline change from storms (including hurricanes), sea-level rise, and other natural and anthropogenic forces. DHEC-OCRM will work closely with researchers and partner agencies with the mission of gathering accurate information, conducting an analysis of the risks to South Carolina's coastal communities and habitats, and developing tools to be utilized by coastal regulators, planners, local agencies and the public. DHEC-OCRM will use the data, the analysis, and the tools to make policy recommendations and to aid local governments in updating beachfront management plans. Policy recommendations may address shoreline retreat, non-beachfront shoreline protection structures, and avoidance of development in hazardous areas.

The following represent the major components and specific tasks of the strategy:

1. Preparing for a Shoreline Change Steering Committee

Task A: Shoreline Summits – DHEC-OCRM will hold two staff summits to explore shoreline management issues. The first summit will focus on internal discussions of challenges and opportunities across DHEC-OCRM divisions; the second will be hosted by the SC Sea Grant Consortium, and will include invited panel presentations and discussion among experts from geological, biological, and political sciences, engineering consultants, and local government.

Task B: State of Knowledge Reports – “State of Knowledge” reports will be prepared as foundation documents for the Shoreline Change Steering Committee, including reports on: a) past and projected shoreline change, related research, and information needs; and b) policy alternatives, with a focus on the state’s “shoreline retreat” policy, and associated challenges and opportunities.

Task C: Steering Committee Meetings – DHEC-OCRM staff will sponsor facilitated meetings of a Shoreline Change Steering Committee to guide data acquisition, research, and policy discussions over the course of the 5-year strategy period. The Committee will be made up of representatives of government, private industry, academia, and nonprofit stakeholder groups.

Task D: Expanding GIS Capabilities – DHEC-OCRM will lay the groundwork for a web-based GIS portal to host information related to shoreline change and coastal hazards. This will be accomplished through: 1) the purchase of an ArcGIS server, relational database software, and other required technologies; 2) expanding personnel with GIS skills; and 3) collaborating with the NOAA Coastal Services Center for technical support; and with other resource agencies and the academic community for input in system design and integration. The portal may eventually include both public and private components for data/resource sharing, analysis, real-time update and discussion, as well as tracking for NOAA Performance Indicators.

2. Research and Analysis

Task E: Meta-analysis of past renourishment projects, monitoring results and research findings in partnership with the DNR.

Task F: Based on Steering Committee recommendations, DHEC-OCRM may acquire spatial data, such as accurate topography and bathymetry, shoreline imagery, or the types and spatial extents of shoreline stabilization devices, to support research efforts associated with this Strategy.

Task G: Based on Steering Committee recommendations, DHEC-OCRM will support research that may include analyses of past and future shoreline changes, vulnerability analyses, sea-level rise scenarios, or effects of shoreline stabilization devices.

Task H: Based on Steering Committee recommendations, DHEC-OCRM will support modeling and integration exercises that will focus on projections of shoreline

change in South Carolina, including changes induced by land use, erosion, storms, sea-level rise, and combinations of these drivers.

Task I: A decision support tool will be developed to foster improved management decisions and policies that are tailored to local circumstances. A web-based GIS tool will likely incorporate demographic trends with vulnerability analyses to evaluate the impacts of shoreline change on community and natural resource resiliencies. Based on guidance from the Steering Committee, the tool will be designed for use by the DHEC-OCRM Planning Division in working with local governments on beachfront management planning, and by the DHEC-OCRM Regulatory Division in making decisions regarding renourishment and beachfront developments. It is hoped that the tool will support other agencies in planning, outreach, and management activities related to shoreline development as well.

Task J: Develop Outreach Plan - DHEC-OCRM staff will develop an outreach plan for the Shoreline Change initiative in cooperation with the South Carolina Sea Grant Consortium.

3. Targeted Program Changes

Task K: Specific recommendations for regulatory and policy changes will evolve from the outcomes of Tasks A - I and steering committee meetings. Policy changes may address shoreline retreat, non-beachfront shoreline protection structures, and the avoidance of development in hazardous areas.

Task L: Aid local governments in updating local beachfront management plans. Staff will work with six of the eighteen local beachfront communities per year to provide technical assistance in updating plans. Selection of communities for each year will be based upon previous review schedules and progress of updates at the community level. Objectives of working with communities will be to enhance components of the plans specifically as they relate to 1) preserving and enhancing public beach access sites, 2) planning for areas seaward of the setback line through conventional zoning and land-use, 3) strengthening coordinated efforts for post-disaster redevelopment, and 4) achieving the goal of a 40-year retreat policy. Additionally, staff will work with communities to integrate data and GIS capabilities into the plans where possible.

Potential Impacts of Program Changes

This strategy will help build resilient communities that take into account future projections of shoreline change by avoiding hazardous areas and retreating to allow the natural migrations of shoreline habitats. The outcomes will reduce the costs of flood disasters to individuals, businesses and all levels of government.

Justification of Appropriate Means

Discussions at a 309 Strategy meeting of stakeholders and staff emphasized the need for accurate data, including coastal elevation, sea level rise and resource

vulnerability data, and how the lack of this type of information impeded planning and modeling efforts. Additionally, the group highlighted a need for better communication and outreach to meet the technical needs of communities. This strategy will address these concerns by providing important tools and products to state and local planners, coastal regulators, and the public for evaluating risks associated with coastal communities and shoreline change. Program changes related to the state's Beachfront Management Act, Critical Area regulations, or other DHEC-OCRM policies are the appropriate mechanisms to address future shoreline change in South Carolina. These changes should be researched and considered in collaboration with federal, state, and local agencies and stakeholders. This collaboration will be fostered through the establishment of a Shoreline Change Steering Committee with DHEC-OCRM as the lead agency.

Work Plan

Year 1:

- Internal DHEC-OCRM Shoreline Change Summits (DHEC-OCRM internal staff, invited speakers)
- Develop "State of Knowledge" white papers on shoreline change and related policy alternatives in South Carolina.
- Define and contact project partners; establish steering committee; develop a detailed work plan; determine geographic scope of the project; and identify data needs.
- Expand GIS Capabilities within DHEC-OCRM.
- Meta-analysis of past beach nourishment activities and studies.

Year 2:

- Maintain steering committee.
- Begin funding data acquisition and research.
- Fund modeling and integration efforts.
- Scope decision-support tool and other final products.
- Provide assistance to local governments in updating Beachfront Management Plans.

Year 3:

- Maintain steering committee.
- Finalize data acquisition, research and model development.
- Construct decision support tool and other products.
- Develop outreach plan to get products to end-users.
- Provide assistance to local governments in updating Beachfront Management Plans.

Year 4:

- Maintain steering committee.
- Test market draft tools and products.
- Refine and finalize tools and products.
- Develop product and tool evaluation metrics.
- Finalized outreach plan.

- Begin implementation of the outreach plan.
- Provide assistance to local governments in updating Beachfront Management Plans.
- Draft specific regulatory and policy amendments to address community resiliency to shoreline change; bring before the Board of Health and Environmental Control for consideration.

Year 5:

- Maintain steering committee.
- Implement outreach plan.
- Evaluate products and tools.

Estimated Costs

Year 1	\$ 295,000
Year 2	200,000
Year 3	150,000
Year 4	150,000
Year 5	150,000
	\$945,000

Likelihood of Success

The following factors are indicators of likely success:

- Political and social awareness of the need for risk assessment and hazard response planning, as evidenced by growing public attention to climate change, insurance rates along the coast, and numerous public forums on these topics;
- Support from partner state and local entities, specifically SC Sea Grant in funding shoreline change and climate change-related research in SC; and
- Design of the project to include a multi-stakeholder steering committee.

Fiscal and Technical Needs

Fiscal Needs

Although the state of South Carolina has had a surplus budget in 2004 and 2005, state agencies are not likely to see any increase in their operating budgets in the coming years. These recent surpluses have been earmarked to cover past state accounting problems, Legislative spending plans, and local government spending. Any remaining surplus will likely go into repaying reserve accounts that were tapped during four years of budget deficits.

This project is scaleable in terms of geographic scope and the level of detail of the datasets that will be collected and utilized. The scope (i.e. geographic coverage) and granularity of the data layers that will be compiled will depend on 1) availability of existing data, 2) availability of state and local resources, and 3) contributions of potential partner entities such as federal agencies/programs, academic institutions, SC Sea Grant and DNR. The final total project budget, therefore, will reflect direct state and local contributions to the project, which are not currently known, the contributions of other state partner institutions and other resources such as competitive grant awards.

The budget included herein reflects the 309 funding to be dedicated during the fiscal years addressed by this strategy.

Technical Needs

Technical needs will be met through existing staff knowledge and agency equipment, through partnerships with federal, state or local entities, and academic institutions, and through contractors. Temporary staff or contractual services will be required to assist with special applications and project development.

OCEAN RESOURCES

Section 309 Programmatic Objectives

- I. Develop and enhance regulatory, planning, and intra-governmental coordination mechanisms to provide meaningful state participation in ocean resource management and decision-making processes.
- II. Where necessary and appropriate, develop a comprehensive ocean management plan that provides for the balanced use and development of ocean and Great Lakes resources, coordination of existing authorities, and minimization of use conflicts. These plans should consider, where appropriate, the effects of activities and uses on threatened and endangered species and their critical habitats. The designation of specific marine protected areas should be considered.

Resource Characterization

1. In the table below characterize ocean resources and uses of state concern, and specify existing and future threats or use conflicts.

Resource or Use	Threat or Conflict	Degree of Threat (H/M/L)	Anticipated Threat or Conflict
<i>Sand mining</i>	Impacts to living and non-living marine habitats and species.	High	A large renourishment project for the Grand Strand will likely occur during the next 5 years. As nearshore sand resources decrease, we anticipate increasing disputes over access to sand resources in close proximity to competing beachfront communities.
<i>OCS Lease Blocks</i>	Impacts to living and non-living marine habitats and species.	Medium	Continuing interest in exploration and use of the OCS for oil and gas production may lead to use conflicts.
<i>Alternative Energy Development</i>	Impacts to living and non-living marine habitats and species, obstructions to navigation.	Medium	Increasing interest in offshore wind energy in the southeast may lead to use conflicts.
<i>Cultural Areas</i>	Mining, spoil disposal and other impacts to the ocean floor have the potential to affect cultural areas.	Low	The threat will increase as activities in the ocean increase. However, cultural sites can be protected through permit conditions.

<i>Spoil Disposals</i>	Impacts to living and non-living marine habitats and species.	High	Maintenance and expansion of navigation channels and associated shipping and boating infrastructure will continue during the next 5 years.
<i>Vessel Discharge</i>	Impacts to living marine habitats and species, and recreational activities.	High	The Port of Charleston is the busiest in the SE and Gulf regions and it plans to expand during the next 5 years.
<i>Coastal Development</i>	Impacts to living and non-living marine habitats and species; and recreational activities.	High	As populations along the coast rise, development activities will continue to increase.
<i>Invasive Species</i>	Impacts living and non-living marine habitats and species; recreational activities; economics.	Medium	<i>Petrolisthes armatus</i> (green porcelain crab) has established in SC and is a threat to the shellfish resources. <i>Pterois volitans</i> (lionfish) has been identified near offshore structures and could pose danger to recreational divers.
<i>Nutrient Runoff / HAB</i>	Impact living marine habitats and species; recreational activities; economics and human health.	High	Increase in impervious surfaces due to coastal growth and development contribute to increased nutrient runoff and potential for HABs.
<i>Fishing / Shellfishing Practices</i>	Impact living marine habitat and species; recreational/commercial activities; economics.	High	Increased demand for use of resources may lead to additional conflicts among users groups.

2. Describe any changes in the resources or relative threat to the resources since the last assessment.

Maintaining the health of South Carolina's beaches is critical to the state's economy. During the next 5 years, significant renourishment projects are anticipated for the Grand Strand, which includes North Myrtle Beach, Myrtle Beach, Surfside and Garden City. Additionally, Pawley's Island, Debidue Beach and Hilton Head will likely renourish their beaches before 2011. Most, if not all, of these projects will look to the ocean for sand. This pressure to mine nearshore areas results in a high threat ranking for sand mining.

As with sand mining, a major expansion of the Charleston Port that is currently proceeding through the permitting process will result in spoil disposal pressures. During the last assessment period, the Port's major upland disposal site was eliminated as a disposal option due to pressure related to the adjoining developments on Daniel Island. Consequently, spoil disposal is now a high threat.

There is mounting pressure to address this country's energy requirements through exploration and resource extraction from the OCS. This threat is more significant in other portions of the nation, but is certainly no longer low for coastal South Carolina. There is also increasing interest in alternative energy (wind power) development in offshore waters of South Carolina.

Management Characterization

1. Identify significant state ocean and/or Great Lakes management programs and initiatives developed since the last assessment:

Program	Status
Statewide comprehensive ocean management statute	None
Statewide comprehensive ocean management plan or system of MPAs	Review of other state programs
Single purpose statutes related to ocean resources	None
Statewide ocean resources planning/working groups	Long Bay Hypoxia workgroup
Regional ocean resources planning efforts	SECOORA membership
Ocean resources mapping or information system	None
Dredged material management planning	Statewide Coastal Marina Dredging Needs Assessment; Dredging and Disposal Alternatives and Techniques Findings
Habitat research, assessment, monitoring	None
Public education and outreach efforts	Long Bay Hypoxia Response plan and listserve

2. For categories with changes:

- Summarize the change
- Specify whether it was a 309 or other CZM driven change and specify funding source.
- Characterize the effect of the changes in terms of both program outputs and outcomes.

Statewide comprehensive ocean management statute

No change during this period.

Statewide comprehensive ocean management plan or system of MPAs

Through a partnership with USC, staff completed a review of other state's ocean plans as well as analyzed the existing available information from South Carolina. DHEC-OCRM support of this effort during this reporting period was through Section 306 funding. It is anticipated that an ocean management planning effort will be initiated during 2007.

Single purpose statutes related to ocean resources

No change during this period.

Statewide ocean resources planning/working groups

A week-long coastal hypoxia event occurred in the summer of 2004 in the Long Bay area off of Myrtle Beach. Insufficient data and information were available to determine the sources and/or conditions that were present that could have triggered this hypoxia event. To address the lack of available information, DHEC-OCRM spearheaded the formation of an interagency working group consisting of a broad range of university and government agency scientists and managers. This group was formed to develop cooperative research efforts and management responses. A one-year study was funded by Southeast Coastal Ocean Observing Regional Association (SECOORA) to gain a greater understanding of the Long Bay ecosystem, enhance coordination of research and management efforts in the area, and coordinate responses to any future hypoxic events. DHEC-OCRM participation in this effort continues to be supported by Section 306 funding.

Regional ocean resources planning efforts

DHEC-OCRM became a member of the SECOORA during this reporting period, which is one of 11 Regional Associations (RAs) being established through the Integrated Ocean Observing System (IOOS). Members will help guide the priorities of the RA, which will in turn help steer programs of the U.S. federal agencies – ensuring that the national information “backbone” maintained under IOOS meets the needs of coastal managers. DHEC-OCRM participation in this effort was supported by Section 306 funding.

Ocean resources mapping or information system

No change during this period.

Dredged material management planning

In response to a recommendation by the Council for Coastal Futures, a Dredging and Spoil Disposal Needs Assessment was designed and a report detailing findings was produced in January 2005. Survey results provided by coastal marinas in South Carolina indicated that most marinas do not plan to dredge in the near future due to either minimal silting problems or lack of funds. Concern was expressed regarding the permitting process and lack of accessible disposal sites. A copy of the document can be viewed at www.scdhec.gov/environment/ocrm/outreach/docs/dredge_assessment.pdf. Additionally, a report evaluating dredging and disposal alternatives and techniques was generated in January 2005. This report introduces options available for handling dredged materials and includes methods, advantages and costs associated with each option. The document is available online at www.scdhec.gov/environment/ocrm/outreach/docs/dredge_tech_alt.pdf. Both of these research initiatives were accomplished with Section 309 funds.

Habitat research, assessment, monitoring

No change during this period.

Public education and outreach efforts

No significant or broadly targeted outreach regarding ocean resources has occurred.

Conclusion

1. Identify priority needs or major gaps in addressing the programmatic objectives for this enhancement area that could be addressed through a 309 Strategy.

A meeting of stakeholders resulted in the identification of gaps in addressing the issue of ocean resources. Among the concerns was the need for South Carolina to develop a State Ocean Resources Plan to address the threats identified above, including an inventory of resources reflecting their value to the state. For example, sand resources are not well mapped in state waters, and limited data exist to assess ocean water quality trends. In addition, there is a need for interagency collaboration on policies and permitting procedures to address the potential for new proposals for ocean uses in state waters, such as offshore aquaculture and alternative energy facilities. These interagency policies and procedures will be established within the Ocean Plan.

2. What priority was this area previously and what priority is it now for developing a 309 strategy and designating 309 funding and why?

Last Assessment

High _____

Medium X

Low _____

This AssessmentHigh X

Medium _____

Low _____

Due to increasing pressures for energy-related development, dredging, and beach renourishment, as well as anomalous water quality events in the Long Bay region that exposed significant gaps in data and understanding of nearshore processes and ambient water quality, DHEC-OCRM has placed a high priority on ocean resource planning for this assessment.

STRATEGY

Primary Objective: *Coordinate interagency policies regarding ocean resources and activities in South Carolina.*

Proposed Program Change

An Ocean Management Plan will be developed for the state of South Carolina that will include background information, improved interagency coordination mechanisms, and guidance on the implementation of specific policies regarding a variety of ocean resources and activities, as prioritized by an interagency Ocean Resources Task Force.

This plan will be revisited every five years to reflect changing circumstances and priorities. The policies developed by the Task Force will result in updates to the ocean resource policies originally developed in the SC Coastal Management Program Document.

Strategy Activities

Over the next five years, DHEC-OCRM will establish an Ocean Resources Task Force made up of representatives of the resource management community in South Carolina, with stakeholder and science advisory panels and involvement of local governments. This Task Force will scope and address ocean resource issues through a long-term, strategic plan. DHEC-OCRM will work closely with researchers and partner agencies with the mission of gathering accurate information, conducting an analysis of issues related to South Carolina's ocean resources, and developing coordinated policies. The following represent the major components and specific tasks of the strategy:

1. Preparing for an Ocean Resources Task Force

Task A: Identify federal, state, and local participants for Ocean Resources Task Force and Advisory Panels – DHEC-OCRM staff will compile a list of 1) agencies and government officials with jurisdiction over ocean resources and activities in South Carolina; 2) government and academic researchers who have focused on ocean resource issues in SC; and 3) affected stakeholder groups; for consideration for invitations to serve on the Task Force or advisory panels.

Task B: Task Force Meetings – DHEC-OCRM staff will sponsor facilitated meetings of the Ocean Resources Task Force to guide data acquisition, research, and policy discussions over the course of the 5-year strategy period. The Committee will be made up of representatives of government, private industry, academic, and nonprofit stakeholder groups.

Task C: Scoping Papers - DHEC-OCRM staff will assist in researching the impacts of offshore mineral mining, spoil disposal, energy development, and aquaculture activities, among other issues and depending on priorities identified by the Task Force and Advisory Panels; and

Task D: Participation in Regional Ocean Governance Activities – DHEC-OCRM staff will, to the extent possible, participate in and support regional partnerships aimed to gather, organize, and coordinate southeastern ocean information, policies, and management activities.

Task E: Develop Outreach Plan - DHEC-OCRM staff will develop an outreach plan for the Ocean Resources initiative in cooperation with the South Carolina Sea Grant Consortium.

2. Research and Analysis

Task F: Based on Task Force and Advisory Committee recommendations, DHEC-OCRM will support research that may include analyses of resource conditions, environmental impacts of ocean activities, human dimensions research, and/or basic data acquisition in support of ocean planning and management activities.

3. Targeted Program Changes

Task G: Specific recommendations for regulatory and policy changes will evolve from outcomes of Tasks A – F and Task Force meetings. An Ocean Management Plan will be developed and will build upon the scoping papers described in Task C. Policy changes may address sand resources, dredge disposal policies, wind energy development, and aquaculture development activities.

Potential Impacts of Program Changes

The Ocean Management Plan will help South Carolina resource management agencies respond to increasing proposals for offshore activities. The outcomes will provide regulatory clarity to individuals, businesses, and all levels of government. Many ocean resource policies adopted in the 1970s for the original SC Coastal Management Program will be updated, and interagency procedures for addressing new proposals will be clarified.

Justification of Appropriate Means

Discussions at a 309 Strategy meeting of stakeholders and staff emphasized the need for accurate data, including the quantities and geographic distributions of various ocean resources. The group highlighted a need for an ocean management plan, which will provide important information to state and local planners, coastal regulators, and the public. Other states have found the establishment of an interagency task force, with the support of science advisory panels and stakeholder advisory panels, to be an effective means to reach consensus on ocean policies and procedures.

Work Plan

Year 1:

- Finalize project partners; establish Ocean Resources Task Force with science advisory panel and stakeholder advisory panel.
- Initial Ocean Resources Task Force meeting (with DHEC-OCRM internal staff, invited speakers from other states with experience in ocean planning).
- Identify initial data and research needs.

Year 2:

- Maintain Task Force and ad hoc advisory panels.
- Develop scoping papers on specific issues, as identified by Task Force.
- Begin funding and assistance with data acquisition and research.
- Develop Draft Ocean Management Plan Framework for review by Ocean Resources Task Force.
- Develop Outreach Plan

Year 3:

- Maintain Task Force.
- Finalize data acquisition and research.
- Develop scoping papers on specific issues, as identified by Task Force.
- Develop Draft Ocean Management Plan for review by Ocean Resources Task Force.

Year 4:

- Maintain Task Force.
- Finalize Ocean Management Plan.
- As identified in the Ocean Plan, bring any newly recommended regulatory and policy amendments related to ocean resource issues before DHEC-OCRM staff for internal review.
- Begin implementation of the outreach plan.

Year 5:

- Maintain Task Force.
- Revise the Ocean Management Plan based on changing circumstances and/or priorities of the steering committee.
- Bring any newly recommended regulatory and policy amendments related to ocean resource issues before the Board of Health and Environmental Control.
- Implement outreach plan.

Estimated Costs

Year 1	\$ 5,000
Year 2	100,000
Year 3	150,000
Year 4	150,000
Year 5	150,000
	\$555,000

Likelihood of Success

The following factors are indicators of likely success:

- Political and social awareness of the need for coordinated ocean policies;
- Support from partner state and local entities, specifically SC Sea Grant and DNR, who participated in the DHEC-OCRM 309 Stakeholder meeting and identified this activity as a priority; and
- Design of the project to include a multi-partner Task Force, local governments and stakeholders.

Fiscal and Technical Needs

Fiscal Needs

Although the state of South Carolina has had a surplus budget in 2004 and 2005, state agencies are not likely to see any increase in their operating budgets in the coming years. These recent surpluses have been earmarked to cover past state accounting problems, Legislative spending plans, and local government spending. Any remaining surplus will likely go into repaying reserve accounts that were tapped during four years of budget deficits.

This project is scaleable in terms of geographic scope and the level of detail of the datasets that will be collected and utilized. The scope (i.e. geographic coverage) and granularity of the data layers that will be compiled will depend on 1) availability of existing data, 2) availability of state and local resources, and 3) contributions of potential partner entities such as federal agencies/programs, academic institutions, SC Sea Grant and DNR. The final total project budget, therefore, will reflect direct state and local contributions to the project, which are not currently known, the contributions of other state partner institutions and other resources such as competitive grant awards. The budget included herein reflects the 309 funding to be dedicated during the fiscal years addressed by this strategy.

Technical Needs

Technical needs will be met through existing staff knowledge and agency equipment, through partnerships with federal, state or local entities, and academic institutions, and through contractors. Temporary staff or contractual services will be required to assist with special applications and project development.

WETLANDS

Section 309 Programmatic Objectives

- I. Protect and preserve existing levels of wetlands, as measured by acreage and functions, from direct, indirect and cumulative adverse impacts, by developing or improving regulatory programs.
- II. Increase acres and associated functions (e.g., fish and wildlife habitat, water quality protection, flood protection) of restored wetlands, including restoration and monitoring of habitat for threatened and endangered species.
- III. Utilize non-regulatory and innovative techniques to provide for the protection, restoration, and acquisition of coastal wetlands.
- IV. Develop and improve wetlands creation programs.

Resource Characterization

1. Extent of coastal wetlands

Wetlands Type	Extent (acres & year of data)	Trends (acres/year)
Estuarine Emergent	366,335 in 1995	6273 acres lost from 1990-1995
Palustrine (Freshwater Tidal / Non-Tidal)	1,131,297 in 1995	30,080 acres lost from 1990-1995
Publicly Acquired Wetlands	N/A	N/A
Wetland Mitigation (Acres Protected, Restored, or Created)	32,060.227 (Through 2005)	N/A
Freshwater Non-Jurisdictional Wetlands Impacted	233.041 (Through 2005)	N/A
Freshwater Jurisdictional Wetlands Impacted	3631.076 (Through 2005)	N/A

- 2. If information is not available to fill in the above table, provide a qualitative description of wetlands status and trends based on the best available information. Also, identify any ongoing or planned efforts to develop quantitative measures for this issue area. Provide explanation for trends.**

The wetland acreages noted above are derived from the NOAA Coastal Services Center Coastal Change Analysis Program (C-CAP), which utilized remote sensing technology to analyze land cover in South Carolina's eight coastal counties. The most notable wetland losses were found in palustrine forested wetland habitat. Freshwater scrub/shrub and emergent wetlands often showed slight increases in acreage.

However, this is most likely due to the conversion of palustrine forested wetlands from clearing or other activities. Based on a study of South Carolina's wetland status and trends from 1982 to 1989, South Carolina had over four million acres of wetlands in 1989, 89 % of which were freshwater, or palustrine, wetlands. Once again, wetland losses were most notable in palustrine forested wetlands, and these losses were attributed, in part, to conversion for urban expansion (Dahl, 1999). Wetland losses due to urban expansion were most significant within the coastal zone, in particular in Charleston, North Charleston, Hilton Head, and Myrtle Beach (Dahl, 1999). Similarly, NOAA Coastal Services Center found that from 1990 to 1995, over 16,000 acres of coastal habitat were converted for high and low intensity development within the coastal counties (NOAA CSC, 1999). Although more current data is unavailable, additional losses in freshwater, forested wetlands are expected. Land conversion for high and low intensity development has continued over the past five years. Additionally, development in marginal areas has increased over the past five years as more suitable upland areas are becoming less available. Further, land disturbance permits involving wetland impacts are primarily affecting freshwater, forested wetlands.

Information on publicly acquired wetlands is currently being sought as part of the routine update of DHEC-OCRM's GIS database. DHEC-OCRM has digital data layers for state and federal protected properties; however, this information needs to be updated and is incomplete for county and local governments within the coastal zone. The data on wetland mitigation acreage and acres impacted was obtained from EFIS. DHEC-OCRM is currently utilizing Section 309 funding for improvements to EFIS that include improved reporting functions for trend analysis by year and geographic region. DHEC-OCRM is currently analyzing total acreage of high and low marsh based on recent high-resolution aerial photography acquired with Section 306 funding. This data should be available by spring of 2007.

3. Characterize direct and indirect threats to coastal wetlands, both natural and manmade. For threats identified, provide the following information: scope of threat, recent trends, and impediments to addressing the threat.

- Development/fill
- Alteration of hydrology
- Erosion
- Pollution
- Channelization
- Nuisance or exotic species
- Freshwater input
- Sea/Lake level rise
- Other

The first five categories represent significant, direct threats to coastal wetlands in South Carolina as a result of increased development pressure. As coastal populations continue to grow and prime real estate is developed, marginal lands that are closer to sensitive wetland resources are being converted for high and low density residential uses. Nonpoint source pollution continues to pose a direct threat to coastal wetlands as a result of increased impervious surface coverage in developed areas. The majority of applications received through the federal consistency and stormwater certification

programs request permission to fill wetlands with occasional requests to conduct excavation. Through stormwater certifications and consistency reviews, DHEC-OCRM works to minimize the potential impacts to estuarine and isolated freshwater wetlands from proposed fill, alterations to natural hydrology, and polluted runoff. However, staff must evaluate wetland impacts on specific project sites without information on the potential impact to larger wetland systems. Currently, a comprehensive assessment of wetland acreage within the coastal zone does not exist, particularly for freshwater wetlands. The most recent data available for use in evaluating impacts is NOAA's C-CAP data, which evaluated wetland impacts from 1990-1995. Addressing threats to coastal wetlands can be difficult without knowing information about the current state of the resource, the types of conversion, or geographic areas and habitats that are experiencing high conversion rates.

Additional impediments to addressing threats to coastal wetlands include a lack of consensus among stakeholders in establishing priority areas for conservation. This lack of cohesion, coupled with limited resources, means that funds available for land acquisition and/or mitigation is often dispersed among many parties and lacks the continuity needed to protect larger wetland systems. There is also a lack of support among state legislators for the establishing regulations for the protection of isolated, freshwater wetlands.

Further, in the absence of incentives for the development and engineering community, residential and commercial projects are rarely designed to minimize impacts to wetlands. Although the development community has expressed interest in performance-based expedited permits, and reduction in fees in exchange for minimizing impacts, the majority of current projects include alterations of the landscape to fit the design rather than projects designed around the existing landscape.

DHEC-OCRM is working to improve EFIS and GIS capabilities to track wetland impacts on a temporal and geographic basis in order to better assess trends.

The impacts from nuisance or exotic species and freshwater input are not currently tracked and need additional analysis. These data gaps are addressed in the discussion of priority needs.

Management Characterization

- 1. Within each of the management categories below, identify significant changes since the last assessment:**

Regulatory program

DHEC-OCRM recently introduced regulatory changes that address impacts to natural resources, primarily from docks. The changes encourage community docks in lieu of multiple private docks, which will in part reduce impacts to estuarine wetlands. Staff time and program resources under Section 306 were used to accomplish these changes.

Wetlands protection policies and standards

No change during this period.

Assessment methodologies (health, function, extent)

No change during this period.

Impact analysis

DHEC-OCRM has funded the acquisition of comprehensive tidal creek data, including waterbodies, marsh vegetation, docks, piers, stormwater ponds, and bridges to islands. As part of this effort, a DockMap extension is being developed for ArcGIS that will allow staff to conduct more thorough analysis of proposed docks, run various dock build-out scenarios, and analyze marsh impacts on a number of geographic scales (county, municipality, watershed, etc.). The data and DockMap extension will be incorporated into the regulatory review process and will be used in planning efforts to encourage voluntary dock restrictions. This initiative was funded with Section 306 funding.

Restoration/enhancement programs

No change during this period.

Special Area Management Plans

Wetland corridors along the Cooper River are being digitally mapped as a result of the Cooper River Corridor SAMP. These corridors will be taken into consideration in future planning and zoning decisions in Berkeley County. This will allow County staff to consider broader scale impacts rather than having wetland impacts examined only on a parcel-level basis. Further, these corridors will provide focus areas for future conservation efforts by local land trusts and other organizations. The Cooper River Corridor SAMP is funded through a separate grant award from NOAA.

Education/outreach

DHEC-OCRM recently finalized its Operational Plan, which incorporates objectives and specific strategies to enhance natural resource protection. The DHEC-OCRM Operational Plan is largely based on the recommendations of the Council on Coastal Futures and the reporting requirements of the NOAA Performance Measures. This plan went into effect in 2005 and includes the following objectives and strategies for education, outreach, and coordination:

- Building the capacity at DHEC and the local level to improve data management, and improving partnerships with other state agencies to better impact the environment;
- Partnering with local governments and communities to encourage and improve land use planning and natural resource protection;
- Increase public awareness through health and environmental education, publications, presentations and the DHEC Web site;
- Protecting sensitive and fragile areas against impacts from encroaching development and restoring and/or enhancing these areas as opportunities are presented. Specific strategies include the encouragement of community docks and voluntary dock restrictions by cooperating landowners.

Implementation of the Council on Coastal Futures recommendations has been funded primarily with Section 306 funds.

Wetlands creation programs

No change during this period.

Mitigation banking

No change during this period.

Mapping/GIS/tracking systems

DHEC-OCRM has recently required all stormwater certification applicants to submit a digital version of proposed project boundaries for incorporation into the GIS database. In addition, DHEC-OCRM is now requiring as-built surveys for permitted docks once construction is completed. This new requirement is intended to ensure that applicants have complied with all terms of the permit and to minimize unnecessary impacts to marsh habitat.

Acquisition programs

DHEC-OCRM is serving as the lead agency for CELCP. South Carolina's CELCP plan identifies specific wetland habitats as priorities for conservation. These habitats include:

- River corridors and associated wetlands, including freshwater/low salinity wetlands and intertidal emergent wetlands such as tidal freshwater marsh and saltmarsh.
- Alluvial swamp forests, including cypress-tupelo swamp, bottomland hardwoods, and riverine swamp forest.

The key to successfully implementing CELCP in South Carolina will be the availability of competitive funding. DHEC-OCRM anticipates that CELCP will provide a significant opportunity for state and local governments, along with non-governmental organizations, to work cooperatively to protect key properties within the coastal zone.

Additional acquisition programs include the South Carolina Conservation Bank which makes grants and loans to public or private entities to acquire property for conservation; and county programs including the Beaufort Rural and Critical Lands Program and the Charleston County Transportation (Half-cent) Sales Tax, programs designed to support greenspace projects including land acquisition.

Publicly funded infrastructure restrictions

No change during this period.

3. For categories with changes provide the following information for each change:

- **Characterize the scope of the change**
- **Describe recent trends**
- **Identify impediments to addressing the change**

See above section for information on changes.

Conclusion

1. Identify priority needs or major gaps in addressing the programmatic objectives for this enhancement area that could be addressed through a 309 Strategy.

The following priority needs for this enhancement area were identified by staff and the stakeholders group:

- Establish a cohesive state plan for isolated freshwater wetlands including a comprehensive inventory, identification of priority wetland systems for conservation, and incentive programs to reduce the number and scope of requests to impact wetlands.
- Develop visual tools or a pilot mapping project to highlight key issues such as wetland loss, flooding issues, etc.
- Determine if the current mitigation program is working effectively and if current monitoring is adequate. Establish methods to prioritize wetlands enhancement and restoration.
- Work with local governments to provide density credits to developers that make efforts to preserve wetlands.
- Research the impacts to wetlands from nuisance and exotic species and from freshwater input.
- Improve the capabilities of DHEC-OCRM to monitor and track wetland impacts through EFIS and GIS applications.

2. What priority was this area previously and what priority is it now for developing a 309 Strategy and designating 309 funding and why?

<u>Last Assessment</u>	<u>This Assessment</u>
High <u> X </u>	High <u> </u>
Medium <u> </u>	Medium <u> X </u>
Low <u> </u>	Low <u> </u>

Efforts to pass legislation dealing with the protection of non-jurisdictional (isolated) wetlands were unsuccessful during this reporting period. DHEC-OCRM will continue to closely monitor any new legislation introduced during the next legislative session. This enhancement area is ranked medium, as it will not be directly addressed in the next 309 strategy. However, DHEC-OCRM will continue to require mitigation for impacts to jurisdictional and non-jurisdictional wetlands as part of the Stormwater Certification program, which is funded with Section 306 funds and program revenues.

CUMULATIVE AND SECONDARY IMPACTS

Section 309 Programmatic Objectives

- I. Develop, revise or enhance procedures or policies to provide cumulative and secondary impact controls.

Resource Characterization

1. **Identify areas in the coastal zone where rapid growth or changes in land use require improved management of cumulative and secondary impacts (CSI).**

Provide the following information for each area:

- **Type of growth or change in land use (e.g., residential, industrial, etc.)**
- **Rate of growth or change in land use**
- **Types of cumulative and secondary impacts**

Population growth rates within South Carolina's coastal zone continue to outpace growth rates for the rest of the state. According to the National Ocean Economic Program, the eight coastal counties saw a nearly 8% rise in population from 981,338 to 1,057,345 during the period of 2000 to 2004. These totals compare to a 4.6% population growth rate for the state as a whole. Among the counties with the highest growth, Beaufort County experienced a growth rate of over 12%, while Dorchester County grew by 11% and Horry County by more than 10.5%.

Waccamaw Region

The Waccamaw region encompasses Horry and Georgetown counties. As mentioned above, development pressures from rapid population increases, particularly in Horry County, are resulting in unmanaged growth and related cumulative impacts. In particular, nonpoint source pollution and stormwater management are key issues for both counties. Horry County has recently experienced hypoxia events in the Grand Strand area, and DHEC-OCRM is currently partnering with Coastal Carolina University and the South Carolina Sea Grant Consortium to monitor conditions in several locations and determine if these hypoxia events are linked to stormwater outfalls on the beachfront. Georgetown County adopted a stormwater ordinance to address this issue (<http://www.georgetowncountysc.org/docs/sword122806.pdf>) and Horry County established a stormwater consortium to provide training and other technical resources (http://www.northinlet.sc.edu/training/stormwater_education/index.htm). Despite these efforts, a lack of funding and technical capacity at the local level continues to slow progress. DHEC-OCRM must coordinate with local governments in this region to foster capacity-building at the local level and mitigate continued impacts from unwise development practices.

Tri-County Region

The tri-county region includes Berkeley, Charleston and Dorchester counties. This region is also experiencing significant population increases with the resulting development pressures, unmanaged growth and related cumulative and secondary impacts from nonpoint source pollution and stormwater management. Land-use

changes along the coast are primarily associated with residential use. Housing rates for the eight coastal counties grew by nearly 12% from 2000 – 2004 (NOEP, 2005). Changes in land-use are shifting from agricultural to residential as timber companies sell large timber tracts, particularly in Berkeley and Dorchester counties. Despite conservation efforts, many of these tracts are being bought for large housing developments in order to keep pace with the growing population. As land-use patterns change, cumulative and secondary impacts are intensifying. Stormwater runoff from impervious surfaces, point source impacts from septic tanks and sewage treatment plants, and NPS impacts pose threats to coastal resources.

Industrial/Commercial uses are also resulting in cumulative impacts in the tri-county region. A recruitment of industry to the coastal zone of South Carolina has caused changes to land-use, especially in the Tri-county area. Industrial sites for an automotive plant, aircraft industry and outlet mall will have associated cumulative and secondary impacts from construction, including filling of wetlands, runoff of impervious surfaces, and other point and nonpoint sources.

The development of a new container terminal for the SPA on vacant portions of the Charleston Naval Base may lessen direct impact on land use due to the redevelopment of the abandoned area. However, cumulative and secondary impacts will still pose a threat, including the need for dredging and accompanying spoil disposal problems.

Lowcountry Region

The Lowcountry region consists of Beaufort, Colleton and Jasper counties. Like the Tri-county and Waccamaw regions, this region is under intense developmental pressures. As mentioned previously, Beaufort County has experienced a 12% population change in the last four years. And according to currently approved development plans, Jasper County will add 160,000 new residential units over the next 10 years to a current county population of around 24,500 (Jasper County Comp Plan). Infrastructure associated with this level of population growth and sprawl will continue to result in an increase in impervious surfaces, associated NPS pollution, habitat loss and competing use issues. Additionally, proliferation of docks from residential waterfront development continues to be an issue of concern. It is increasingly difficult for the local governments of this region, especially those in rural Jasper and Colleton counties, to keep pace with the technical capacity needs to effectively manage growth pressures within their jurisdiction.

In 2004, South Carolina's governor signed legislation calling for the closure of a 40-acre state port facility located in Port Royal, Beaufort County. Although plans for redevelopment of this site includes mix uses and could lessen direct impacts on land use through "in-fill", concerns have been raised including the amount of open space to be set aside, transportation impacts and waterfront access rights. Cumulative and secondary impacts from a planned 1,800 acre marine cargo terminal in Jasper County along the Savannah River are not known at this time, as an Environmental Impact Statement has not commenced. The proposed terminal site is currently owned by the Georgia Department of Transportation and is being used for storing of dredge spoils.

- 2. Identify areas in the coastal zone, by type or location, which possess sensitive coastal resources (e.g., wetlands, waterbodies, fish and wildlife habitats, threatened and endangered species and their critical habitats) and require a greater degree of protection from the cumulative or secondary impacts of growth and development.**

Area /Sensitive Coastal Resource	CSI Threats
Estuaries / Tidal Creeks / Shellfish Habitat	Development, dock proliferation, septic tanks, NPS
Wetlands	Development pressures
GAPCs	Development pressures, unmanaged growth
Long Bay (Horry County)	Drainage, hypoxia
Beachfronts	Shoreline changes, development pressures

Management Characterization

- 1. Identify significant changes in the state's ability to address CSI since the last assessment (e.g., new regulations, guidance, manuals, etc.). Provide the following information for each change:**

- **Characterize the scope of the change**
- **Describe recent trends**
- **Identify impediments to addressing the change**
- **Identify successes in improved management**

Revised Dock and Marina Regulations – Amendments to South Carolina's Coastal Tidelands and Wetlands Act were adopted in May 2005 that revised specific project standards for the permitting of docks and marinas in the coastal zone. Amendments changed the defined length of docks and marinas to provide DHEC-OCRM more incentives for the construction of community docks in lieu of multiple private docks. Prior to the change, community docks were considered marinas and needed to meet additional permitting requirements. The amendments also set ratios for exchanging private docks for community docks at a level of 2:1, or 40 feet of community dock for the elimination of one private dock. Staff time and program resources under Section 306 were used to accomplish these amendments.

Tidal Creek Study and Dock Build-out Tool - DHEC-OCRM has funded the acquisition of comprehensive tidal creek data, including waterbodies, marsh vegetation, docks, piers, stormwater ponds, and bridges to islands. As part of this effort, a DockMap extension is being developed for ArcGIS that will allow staff to conduct more thorough analysis of proposed docks, run various dock build-out scenarios, and analyze marsh impacts on a number of geographic scales (county, municipality, watershed, etc.). The data and DockMap extension will be incorporated into the regulatory review process and will be used in planning efforts to encourage voluntary dock restrictions. Section 306 funding was utilized for the DockMap extension and the first phase of the tidal creek inventory. The second phase of this effort, including the effort to encourage voluntary dock restrictions, is being funded under Section 309. This initiative is expected to

improve the management of coastal resources through more comprehensive reviews, the ability to analyze cumulative impacts, and visual tools for use in planning strategies.

Septic System Ordinance Development – The City of Folly Beach in Charleston County adopted a comprehensive OSDS management ordinance in 2005. The ordinance requires routine maintenance, and DHEC permits and final approval of OSDS for any new construction, renovation or change in occupancy. Additionally, it requires a baseline inspection of existing OSDS prior to the sale of a structure. This effort was funded under Section 309 and will serve as a model for other local communities as they develop OSDS ordinances and maintenance requirements.

Compliance Inspection Initiative – DHEC-OCRM implemented a stormwater inspection program establishing new agency procedures for issued stormwater permits. DHEC-OCRM now requires all applicants of stormwater permits to provide post construction surveys to determine project boundaries and if projects have been built to specifications outlined in the original permit. The stormwater inspection program is funded under Section 309 and is enabling staff to determine compliance levels, identify areas of limited success and make recommendations that will lead to improved permitting requirements.

Conclusion

1. Identify priority needs or major gaps in addressing the programmatic objectives for this enhancement area that could be addressed through a 309 Strategy (i.e., inadequate authority, data gaps, inadequate analytical methods, lack of public acceptance, etc.).

Many of the major gaps in addressing goals of this enhancement area centered on a lack of data or knowledge. Stakeholders and staff identified the following as priority needs for addressing the gaps:

- Develop master plan/finite capacity model that considers important coastal habitats and other factors while accommodating growth.
- Develop guidelines for considering cumulative impacts on watersheds.
- Develop a set of criteria for decision-making that requires consideration of a project's impacts on the surrounding resources and the general area.
- Gain better information on the maintenance and efficiency of stormwater BMPs.
- Determine consistent and effective strategies for planning and managing growth.
- Assist coastal counties with the development of better GIS information/database for those counties that lack data.

2. What priority was this area previously and what priority is it now for developing a 309 strategy and designating 309 funding and why?

<u>Last Assessment</u>	<u>This Assessment</u>
High <u> X </u>	High <u> </u>
Medium <u> </u>	Medium <u> X </u>
Low <u> </u>	Low <u> </u>

Cumulative and secondary impacts remain a high priority for this agency, however, this area is being considered a medium priority in terms of 309 funding. Direct program efforts to address cumulative and secondary impacts will be funded with state revenues from stormwater fees, critical area permitting fees, and other federal funding.

MARINE DEBRIS

Section 309 Programmatic Objectives

- I. Develop or revise programs that reduce the amount of marine debris in the coastal zone.

Marine Debris Characterization

1. In the table below, characterize the extent of marine debris and its impact on the coastal zone.

Source	Impact (sig/mod/insig)	Type of Impact (aesthetic, resource damage, etc.)
Beach, Boat Ramp, and Marina litter	Moderate	Aesthetic, resource damage
Fish waste, hull paint and litter in marina waters	Moderate	Aesthetic, water quality degradation, resource damage
Commercial Fishing Equipment (fishing gear, crab pots, etc)	Significant	Navigational hazard, aesthetic, environmental hazard
Mariculture Structures	Moderate	Navigational hazard, aesthetic, environmental hazard
Abandoned Vessels	Significant	Navigational hazard, aesthetic, environmental hazard
Miscellaneous Debris Resulting from Hurricanes or Major Bridge Construction	Significant	Navigational hazard, aesthetic, environmental hazard

2. If any of the sources above or their impacts have changed since the last Assessment, please explain.

Derelict vessels and commercial fishing and crabbing equipment continue to increase along the coastal zone of South Carolina. Abandoned commercial gear is a growing concern in coastal waters. Lost or derelict crab pots may result from intentional abandonment or from inadvertent losses. Pots can be moved by strong tides or storms, improper assembly or maintenance of buoys, or by intentional cutting of buoy lines by vandals. Float lines can also be cut by boat propellers. Derelict pots can present ecological problems if left in the water since pots can continue to catch crabs and other marine life.

3. Do you have beach clean-up data? If so, how do you use this information?

DHEC-OCRM's Adopt-a-Beach program is a voluntary litter reduction program that employs civic clubs, school groups, neighborhood associations and other organizations

to assist in beach cleanup efforts. Participants in the program adopt a stretch of beach and agree to clean the area at least twice a year. Organizations are highlighted via DHEC-OCRM's Web site, literature, and signs at the adopted stretch of beach. Approximately 40 organizations currently participate in the program. A total of 675 bags of trash were collected from 2003 through 2005.

Additional litter reduction efforts are organized throughout the coastal zone, most notably SC's Beach Sweep/River Sweep coordinated by the SC Sea Grant Consortium. This cleanup takes place annually in conjunction with the International Coastal Cleanup. Debris data is tallied after each event and made available via the Web. A total of 7,600 bags of debris were collected from the 2002, 2003 and 2004 events. Beach clean-up data helps DHEC-OCRM and other agencies classify sources of debris and sites of significant impact. In addition, this data can be used to identify outreach program/information needs to encourage pollution prevention.

Management Characterization

1. For the categories below, identify significant state ocean management programs and initiatives developed since the last Assessment:

Program	Status
State/local program requiring recycling	none
State/local program to reduce littering	Marine Debris & Abandoned Vessel Task Force and Debris Removal Program PalmettoPride
State/local program to reduce wasteful packaging	none
State/local program managing fishing gear	Monofilament recycling program
Marine debris concerns incorporated into harbor, port, marina, and coastal solid waste management plans	SC Clean Marina Program
Education and outreach programs	media coverage, publications, presentations and Web site information Abandoned Vessel and Marine Debris Removal Program

Basic litter is the most prevalent marine debris issue in South Carolina. Abandoned vessels and post-storm debris are also major problems and pose serious environmental and navigational hazards. Derelict fishing gear including aquaculture equipment is not a major source of marine debris in the state.

In 2004, SC's cleanup efforts on International Coastal Cleanup Day netted 85,535 pieces of garbage (over 21,000 lbs.). This debris ranged from plastic bags to fishing gear to building materials. Over 27,000 pieces were cigarettes and cigarette filters, (32.1% of the total amount collected) with an additional 2,044 items being cigar tips. Other common items collected included food wrappers and containers, beverage cans and straws.

2. For the changes identified above provide a brief description of the change:

- Characterize the scope of the change
- Describe recent trends
- Identify impediments to addressing the change
- Identify successes

State/local program requiring recycling

No new programs or initiatives were instituted during this Assessment period.

State/local program to reduce littering

PalmettoPride – PalmettoPride, a non-profit, 501(c) 3 organization incorporated in 2001, is comprised of state agencies, concerned citizens, corporate sponsors, and community and civic organizations with the stated goal of encouraging "behavioral change" in citizens about litter. PalmettoPride organizes groups to clean up existing debris and focuses on education, enforcement, and awareness of litter. In 2004, volunteers picked up more than 2.2 million pounds of trash in over 363 events across the state. DHEC is an active partner in PalmettoPride.

Friends of the River – Friends of the River, started in January 2001, is an organization comprised of state agencies, concerned citizens, corporate sponsors, and community and civic organizations that focuses on keeping local Beaufort County rivers clean in the face of rapid development. Goals of this organization include supporting local policymakers and municipalities by organizing local river cleanups and providing other assistance when requested; educating citizens about their roles in protecting water quality; and supporting research in the community. Friends of the River places water quality issues in the forefront of the public through press releases and newspaper articles, publications and social events. DHEC-OCRM staff participates on the Friend of the River Advisory Committee. This non-profit organization mission complements the Marine Debris enhancement area, however, no 309 funding was allocated for this program.

Abandoned Vessel and Marine Debris Removal Program – In 2000, the 309 Assessment and Strategy noted that there was a need to address the growing issue of abandoned vessels throughout the coastal zone. A strategy was identified to implement a removal program for derelict vessels.

In 2004, DHEC-OCRM, DNR, USCG, and the US Army Corps of Engineers formed the Marine Debris and Abandoned Vessel Removal Task Force (Task Force). These four agencies have regulatory authority over boating, tidal marsh areas, and open water areas along South Carolina's coast. The Task Force was organized to coordinate efforts to manage debris removal, and to raise public awareness about the problems associated with debris.

In September 2004, DHEC-OCRM began implementation of a marine debris removal project in the Charleston Estuary Area. The Task Force began by constructing a database of debris sites in and around Charleston Harbor. DHEC-OCRM organized existing data maintained in other Task Force agency databases and also recruited the public's help in site identification by advertising in local newspapers. Additional sites

were documented during routine fieldwork conducted by DHEC-OCRM and Environmental Quality Control staff.

A total of 60 sites were identified as having major debris material. Sites were evaluated based on criteria including environmental, economic, and navigational impacts, relationship to shellfish beds, public interest, etc. This process reduced the debris locations designated for the Charleston area to 22 sites. Five of these sites were subsequently voluntarily removed via regular enforcement avenues. Accordingly, 17 sites were cleaned of debris.

The second phase of the marine debris removal project is underway in the Beaufort, Jasper, and Colleton area. Inventory and assessment data has been completed for 26 debris items. DHEC-OCRM has moved forward in forging innovative cost-sharing partnerships with one local municipality to remove inventoried items from Beaufort area waters.

Although this program is seeing many successes, enforcement obstacles still remain. Existing regulations requiring owners to remove derelict vessels can be difficult to implement because either no responsible party can be identified or the party cannot afford to remove the debris.

Additionally, lessons were learned regarding the use of appropriate language when notifying the media and public of removal operations. It is important to ensure that the public understands that vessels and marine debris will be removed only where enforcement remedies are not successful or available. This is necessary to discourage individuals from scuttling their vessels with the expectation that a vessel removal project will salvage & dispose of their vessel.

Administration of this program; and educational and outreach efforts were funded through Section 309. Other aspects of this project, including vessel removal, were conducted under a separate NOAA grant.

State/local program to reduce wasteful packaging

No changes during this period.

State/local program managing fishing gear

Monofilament Recycling Program – The DNR instituted a monofilament recycling program in 2004. The goals of the program are to educate the public on the problems caused by monofilament line left in the environment, to encourage monofilament recycling through a network of recycling bins and drop-off locations, and to conduct volunteer events to collect discarded monofilament line. Collection bins were placed at tackle, boating and other marine supply stores. Hundreds of pounds of monofilament have been recycled and the tackle shops have been eager to participate. PVC constructed collection bins have been planned for placement at piers, marinas and boat landings.

Marine debris concerns incorporated into harbor, port, marina, and coastal solid waste management plans

Clean Marina Program - The SC Clean Marina Program (CMP) recognizes marinas that engage in environmental practices and management activities that serve to protect the valuable resources of South Carolina's estuaries. The overall objective of the CMP is to

promote the prevention of pollution through a voluntary effort by the marinas. The CMP establishes a set of simple environmental practices that will help anticipate pollution problems through an effective and cost-efficient means of prevention. To achieve the Clean Marina designation, marinas must satisfy criteria that include instituting recycling programs, and providing well-maintained waste facilities for paints, cleaners, batteries and other hazardous wastes.

The CMP went through a review in 2002 - 2003 and improvements were made in the program including establishing a SC Clean Marina Advisory Panel to assist in decision making: restructuring of the clean marina designation process and compliance criteria; and developing a BMP guidebook to assist marinas seeking clean marina status. Nine marinas have been designated as Clean Marinas in South Carolina under the revised process.

Education and outreach programs

Media – Many news outlets covered a wide-range of debris reduction programs throughout this Assessment period including coverage by local print and television outlets.

Publications – Clean Boating Tips cards were produced in 2003 to provide boaters with valuable information on proper waste disposal, including how to reduce waste. The card also encourages recycling.

A CMP brochure and newsletter, developed in 2003, were circulated to provide information about the program and encourage participation by marina operators/owner and support of designated clean marinas by the boating public.

A Marine Debris FYI fact sheet was produced in 2003 to inform the public of litter along the coastal zone. It is available via DHEC's Web site at www.scdhec.gov/recycle/forms/new_fyi/marine%20debris.pdf.

A brochure detailing dock construction standards was developed in 2005 to serve as a guide to help citizens through the dock permitting process, and to provide information on standards for dock construction and maintenance.

Presentations – A poster presentation regarding the Marine Debris Removal Program was provided at the 2005 Coastal Zone conference. The presentation described the removal efforts and partnerships underway in the Charleston and Beaufort areas.

Web site - DHEC-OCRM's Web page was redesigned to educate the public about programs and outreach initiatives underway throughout the coastal zone including information on Adopt-a-Beach and the Marine Debris Removal Program.

Abandoned Vessel and Marine Debris Removal Program – See section above for detail of this program.

Conclusion

1. Identify priority needs or major gaps in addressing the programmatic objectives for this enhancement area that could be addressed through a 309 Strategy.

A meeting of stakeholders resulted in the identification of gaps in addressing the issue of marine debris. Among the concerns were identifying a consistent source of funding to remove debris that cannot be resolved through enforcement actions.

Additionally, there is a growing concern for dock debris, and derelict fishing gear, specifically crab pots.

As mentioned in a previous section, current regulations requiring owners to remove derelict vessels can be difficult to implement because either no responsible party can be identified or the party cannot afford to remove the debris.

Although the needs outlined above are important to the agency, efforts to address marine debris issues will be pursued through methods other than 309 funding and therefore, this information is not presented in context of how it could be addressed through a 309 strategy. This information will be used when evaluating priorities for other funding opportunities and will be presented in the context of specific grant submission requirements.

2. What priority was this area previously and what priority is it now for developing a 309 Strategy and designating 309 funding and why?

<u>Last Assessment</u>	<u>This Assessment</u>
High <u> X </u>	High <u> </u>
Medium <u> </u>	Medium <u> X </u>
Low <u> </u>	Low <u> </u>

Marine debris continues to be a high priority for the agency, however, it is being ranked as a medium 309 funding priority. DHEC-OCRM is making efforts to network with other state and federal agencies, local governments and NGOs to address this issue through innovative cost-sharing methods, outside grant opportunities, and methods other than 309 funding.

SPECIAL AREA MANAGEMENT PLANS

Section 309 Programmatic Objectives

- I. Develop and implement special area management planning in coastal areas applying the following criteria:
 - Areas with significant coastal resources (e.g., threatened and endangered species and their critical habitats, wetlands, waterbodies, fish and wildlife habitat) that are being severely affected by cumulative or secondary impacts;
 - Areas where a multiplicity of local, state, and federal authorities hinder effective coordination and cooperation in addressing coastal development on an ecosystem basis;
 - Areas with a history of long-standing disputes between various levels of government over coastal resources that has resulted in protracted negotiations over the acceptability of proposed uses;
 - There is a strong commitment at all levels of government to enter into a collaborative planning process to produce enforceable plans;
 - A strong state or regional entity exists which is willing and able to sponsor the planning program.

Resource Characterization

1. Using the criteria listed above; identify areas of the coast subject to use conflicts that can be addressed through special area management planning (SAMP).

Although growth rates are higher in certain coastal counties, conflicts resulting from increased growth are an issue throughout the eight-county coastal zone. Major conflicts may include:

- incompatible land uses that exist at urban or suburban/rural fringes,
- sustainable natural resource use versus private property rights (e.g. community dock vs. multiple single residential docks),
- public access to resources versus private ownership, and
- designation of growth and conservation areas.

Special Area Management Plans have been used effectively in the past to address the use conflicts resulting from increased demand on coastal resources. For example, the management recommendations from the Charleston Harbor Project SAMP address a variety of specific issues pertaining to public outreach, biological resources, water quality, and growth management. However, a meeting of stakeholders resulted in the identification of both geographic and resource based gaps in recent SAMP efforts. Concern exists over the ability to enforce and implement the recommendations of SAMPs. The stakeholder group indicated that a SAMP was needed for the Long Bay/Myrtle Beach area in Horry County, and that shellfish habitat protection needed to be integrated into more SAMPs. Additionally, stakeholders indicated that effective

incentives to encourage developers to “do the right thing” should be investigated and possibly incorporated in future SAMP efforts.

Management Characterization

1. Identify areas of the coast that have or are being addressed by a special area plan since the last Assessment:

- The City of Georgetown SAMP was expanded during this period to include additional areas in the waterfront revitalization effort.
- The Murrells Inlet SAMP, also in Georgetown County, is ongoing and is addressing water quality issues in the Inlet. As part of this effort, a waterfront park is being redesigned with alternative BMPs, a shell recycling program has been established to restore oyster reefs, and a research project is being conducted to evaluate the effectiveness of UV treatment for stormwater ponds. DHEC-OCRM has been integrally involved in the development and oversight of the SAMP since its inception and the management of the various projects and initiatives. DHEC-OCRM staff has attended numerous planning meetings with county and municipal staff and, based on these discussions, have focused SAMP resources on addressing stormwater issues in the Murrells Inlet SAMP area. Depending on the cost-effectiveness and outcomes of the UV project, this treatment method could be widely used along the coast to address water quality concerns in stormwater ponds. Similarly, the alternative BMP project and shell recycling program can be used as models for future planning efforts.
- The Cooper River Corridor SAMP in Berkeley County is nearing completion. A Natural Resources Management Plan has been produced for the Corridor and the Cultural Resources group has established a kayak trail and a living history museum. DHEC-OCRM hired a facilitator to conduct a series of stakeholder meetings for the development of the Natural Resources Management Plan. The stakeholder group was diverse and included local landowners; local, state and federal government representatives; special interest groups; private industry and resource managers. DHEC-OCRM staff attended all meetings and helped facilitate the discussion of critical issues facing this region. The resulting Management Plan is a consensus document that has the support of the various stakeholders and DHEC-OCRM staff.

2. Identify any significant changes in the state’s SAMP programs since the last Assessment (i.e., new regulations, guidance, Memorandums of Understanding, completed SAMPs, implementation activities, etc.). Provide the following information for each change:

- Characterize the scope of the change
- Describe recent trends
- Identify impediments to addressing the change
- Identify successes
- During this assessment period, the Beaufort County SAMP was completed, resulting in the establishment of a stormwater utility, the development of a

boating management plan, recommendations for community onsite wastewater management systems and the establishment of shell recycling programs.

- The Cooper River Corridor SAMP resulted in a Memorandum of Understanding with SC Archives and History regarding how historic properties are reviewed on the Upper Cooper River.
- The SAMP with the City of Georgetown is largely credited for the successful revitalization of the City's waterfront area.

Although SAMPs have been identified as useful mechanisms to address watershed level issues, several impediments have been identified during this assessment period. First, SAMPs lack a stated funding source. Funding available through Section 309 is not sufficient to fund both SAMP planning and implementation efforts, as well as other priorities identified in the 309 Strategy. In addition, no implementation funding has been identified for long-term policy issues, and the overall time frame needed to complete SAMPs has been a concern.

Conclusion

1. Identify priority needs or major gaps in addressing the programmatic objectives for this enhancement area that could be addressed through a 309 Strategy.

Given stakeholder concerns regarding SAMP implementation, enforcement and focus, future SAMP efforts must be carefully constructed to guide implementation on the local and state level once the planning phase is complete. Often, the planning documents produced through the SAMP process provide a wide range of recommendations; however, implementation of these can be a long-term process that requires dedicated staff and funding. The time frame and funding requirements for implementation should be more carefully considered as management plans and other resource documents are formed.

2. What priority was this area previously and what priority is it now for developing a 309 Strategy and designating 309 funding and why?

<u>Last Assessment</u>	<u>This Assessment</u>
High <u> X </u>	High <u> </u>
Medium <u> </u>	Medium <u> </u>
Low <u> </u>	Low <u> X </u>

Special Area Management Plans are a low priority for DHEC-OCRM and will not be incorporated in the upcoming 309 Strategy. However, planning staff funded under Section 306 and existing SAMP funding will continue to work on implementation and enforcement of the recommendations and outcomes of current SAMP efforts. If DHEC-OCRM agrees to engage in future SAMP efforts, other funding sources will be sought outside of Section 309.

ENERGY & GOVERNMENT FACILITY SITING

Section 309 Programmatic Objectives

I. Enhance existing procedures and long range planning processes for considering the needs of energy-related and government facilities and activities of greater than local significance.

II. Improve program policies and standards which affect the subject uses and activities so as to facilitate siting while maintaining current levels of coastal resource protection.

Management Characterization

1. Identify significant changes in the state's ability to address the siting of energy and government facilities since the last Assessment (e.g., new regulations, guidance, manuals, etc.). Provide the following information for each change:

- **Characterize the scope of the change**
- **Describe recent trends**
- **Identify impediments to addressing the change**
- **Identify successes**

Energy Facility Siting

The passage of the national Energy Policy Act of 2005 raises concerns over the ability of the state to regulate the siting of future energy facilities. The law gives the federal government authority to overrule the state and municipalities in choosing locations for facilities like Liquefied Natural Gas (LNG) terminals. In addition, it expands the types of facilities that would be exempt from having to provide environmental impact studies under NEPA.

LNG - Although South Carolina does not have a LNG terminal within its coastal zone, the Elba Island terminal located in Georgia on the Savannah River is of concern to the state due to the direct impacts it has in our coastal resources. The Elba Island terminal powers a new electricity-generating plant via an interstate pipeline that runs through Jasper County, SC. The terminal is currently completing a major two-phased expansion project that is expected to be in service in February of 2006. The approximately \$157 million expansion will nearly double the size of the terminal, increasing total storage capacity to 7.3 billion cubic feet and total peak send-out capacity to over 1.2 billion cubic feet per day. The expansion also includes a new turning basin and new docking facilities that will accommodate two LNG vessels at once. DHEC-OCRM issued a Critical Area Permit in 2001 associated with this expansion for the berth deepening and the new turning basin. Additionally, a consistency certification was issued in 2002 for impacts to 23.8 acres of wetlands within South Carolina.

Although no new proposals have been submitted to date, the Elba Island terminal anticipates a third expansion of its terminal within the next five years including construction of a new 190-mile interstate pipeline. A scoping document for this third

phase of expansion is currently in the FERC process. (www.elpasocorp.com/elba3/elba3expansion/default.shtm).

In previous years, expansion of the terminal has typically required direct permits and/or federal consistency certifications from DHEC-OCRM. However, it is currently unclear whether South Carolina's federal consistency review authority will be reduced or eliminated by the passage of the Energy Policy Act of 2005. It is also confusing whether LNG facilities are required to apply for state permits for projects that are subject to the LNG siting process.

Wind - There has been a growing interest in South Carolina in assessing the potential for wind energy development in the state and assisting developers in finding suitable sites for wind energy projects. The South Carolina Energy Office recently conducted a wind map study designed to create high-resolution wind resource maps of the state and to provide wind resource data in a GIS format. The study completed in 2005 indicates that the wind resources of South Carolina are relatively strong offshore and at exposed points along the coast but declines substantially inland. At heights of 70 meters, the predicted wind speeds offshore range from 6.5 to 7.5 meters/second near the coast to 8.0 and 8.5 m/s farther offshore. Sustained winds in the rest of the state are generally less than 6.0 m/s at 70 meters. (www.energy.sc.gov/Renewable%20energy/wind.htm)

Any development of a wind farms off the coast would require state and federal permits and/or consistency certification and would likely generate a great deal of public interest. Because the development of a wind farm would require installation of offshore and onshore infrastructure, siting and navigational issues, including shipping and boating uses, would need to be addressed. Other concerns that would likely be considered under a permitting process would include aviary impacts (bird migration and nesting), aquatic habitat impacts and possible aesthetic issues if structures were visible from shore.

Government Facility Siting

After years of contention over the new port terminal site on Daniel Island, the General Assembly passed a joint resolution in May 2002 requiring the State Ports Authority (SPA) to identify optional locations for development of the new port. Specifically, the resolution required the SPA to locate the new terminal facilities on the west bank of the Cooper River and to begin environmental impact studies and other required actions for permitting.

The SPA sited the new terminal at the Charleston Naval Complex, property that was left vacant after the base closing in 1993. The SC General Assembly split the base property in 2002, giving the southern end to the Ports Authority.

The proposed container terminal has seen less public opposition than the site location on Daniel Island, however, there are still concerns from the community, specifically residents who live near the facility and will be impacted by traffic, proposed new roads and other infrastructure requirements.

Conclusion

1. Identify priority needs or major gaps in addressing the programmatic objectives for this enhancement area that could be addressed through a 309 Strategy.

A meeting of stakeholders and staff resulted in the identification of gaps in addressing the issue of energy facility siting. The major concern among the group centered on the lack of a plan for energy resources / energy siting activities in the coastal zone of South Carolina.

As mentioned in the above section, South Carolina is attempting to gain a better understanding of the implications that the new national Energy Policy Act will have on DHEC-OCRM's authority for consistency review of LNG facilities. National discussions among coastal states would be beneficial in identifying common concerns, and would provide a forum for requesting feedback from federal agencies on the intended impacts of the bill.

Additional concerns with the Energy Policy Act of 2005 surround the mandate for developing an inventory of offshore, OCS resources. Although estimates are available, accurate levels of offshore resources are not known, and funding is not currently available to obtain this information.

2. What priority was this area previously and what priority is it now for developing a 309 Strategy and designating 309 funding and why?

Energy Facility Siting

Last Assessment

High _____

Medium _____

Low X

This Assessment

High X

Medium _____

Low _____

Government Facility Siting

Last Assessment

High _____

Medium X

Low _____

This Assessment

High _____

Medium X

Low _____

South Carolina has concerns over the ramifications to the state's resources with the passage of the Energy Policy Act of 2005 and therefore, has increased the priority level to high for this enhancement area. Although the impacts to the state's authority are not fully known at the time, there are concerns over the ability to require LNG facilities sited in the coastal zone to meet consistency standards of the CZMA. Additionally, with the potential for development of wind farms offshore, there is an increased need to develop a plan to address potential impacts and permitting processes associated with future expansion of energy facilities. A strategy to address these concerns and impacts to coastal resources will be included in the ocean planning strategy outlined under the Ocean Resources enhancement area.

The state will continue to monitor government facility siting. This enhancement area is considered a medium priority, and therefore, 309 funding will not be sought to implement any potential program efforts.

AQUACULTURE

Section 309 Programmatic Objective

- I. Enhance existing procedures and long range planning processes for considering the siting of public and private marine aquaculture facilities in the coastal zone.
- II. Improve program policies and standards which affect aquaculture activities and uses so as to facilitate siting while ensuring the protection of coastal resources and waters.

Resource Characterization

1. Briefly describe the state's aquaculture activities (e.g., existing procedures, plans, program policies and standards).

Shellfish - Aquaculture activities in South Carolina's coastal zone continue to be dominated by shellfish mariculture, specifically hard clams. Clams are grown in confinement areas of the intertidal and subtidal zones using soft mesh bags and mesh screening placed on the bottom.

Bottom leasing became available for shellfish mariculture with a change in state law in 1986. As of 2003, 28 mariculture permits were issued by the DNR. Mariculture permit areas are designated by a perimeter boundary, given an identification number and the total bottom acreage is used to determine the annual fee. Mariculture harvesters need additional permits to possess undersize clams and to harvest out of season. Maricultured clams are harvested and sold either at market size or as seed clams, which are transported and grown out in other states. The selling of seed clams is a large part of the industry in South Carolina.

The number of mariculture permit holders has increased each year, and is expected to continue to rise. Clam mariculture is a major portion of the shellfish industry with an estimated 5.5 million dollar farm gate value in 2004. Since 1994, mariculture has accounted for nearly 60% of the state's total clam landings per season (SC Shellfish Management Plan, 2005).

Shrimp - Shrimp farming in South Carolina has made a modest comeback after the virus outbreaks in farms during the mid-90's. This comeback is due in part to increased confidence from growers due to new management techniques and availability of crop insurance.

Researchers at the DNR's Waddell Mariculture Center continue to explore options for shrimp farmers, including recent success in rearing shrimp year-round in climate-controlled greenhouses. This technology is shared with farmers through agricultural extension services provided by SC Sea Grant Consortium/Clemson Extension and DNR.

Other - Additional aquaculture ventures within the coastal zone include rearing of finfish like hybrid striped bass for private pond stocking, and bait fish like minnows and eels.

Aquaculture activities within the coastal zone are closely monitored by both DNR and the DHEC-OCRM. Specific standards continue to be applied to operational facilities within the coastal zone under DHEC-OCRM critical area permitting. Standards include, but are not limited to, requiring operational plans that outline potential environmental impacts, user-conflicts and navigational issues; limiting square footage of growing space; and requiring BMPs. These regulations ensure that the facilities are consistent with the state CZMP in order to obtain a permit.

Additionally, DNR continues to require a mariculture permit for culture activities involving saltwater gamefish or other fish that are governed by size or possession limits. Mariculture permits allow for collection, importation, and holding of saltwater fish for brood stock and for the propagation; and allow for holding, transport, and processing of the fish produced through mariculture activities. These permits also allow the taking of such fish and specify conditions related to lawful collection, catch and size limitations, holding facilities, and catch reporting requirements.

2. Briefly describe environmental concerns (e.g., water quality, protected areas, impacts on native stock and shell fish resources). Also, describe any use conflicts (e.g., navigational, aesthetic, incompatible uses, public access, recreation, and future threats (e.g., shoreline defense works, introduced species)).

Shellfish - With the growth in the shellfish mariculture industry, user conflicts are a growing concern. Demand for additional mariculture permit areas is increasing, potentially conflicting with existing demand for State Shellfish Grounds and Culture Permits areas. Wild clam harvesters have expressed concerns that the mariculture industry is hurting their trade to some extent due to the fact that mariculture product can be harvest year round while wild clam harvest is not allowed during the summer months(SC Shellfish Management Plan, 2005).

Interstate Seed Transport: There are issues of concern for the shellfish industry regarding potential transfer of diseases from imported seed. To investigate this concern, South Carolina hosted the *Eastern U.S. Interstate Shellfish Seed Transport Workshop* in spring of 2002 to examine interstate shipment of oyster and clam seed. Participants included shellfish pathologists, shellfish management personnel, veterinarians and shellfish growers (primarily hard clam growers). The goal of the workshop was to make recommendations for developing a uniform set of criteria for the shipment of shellfish between jurisdictions. The focus was on diseases specific to shellfish that are imported and exported. Recommendations were made for future research and disease testing. A summary document based on the discussion of the workshop is available online at www.scseagrant.org/pdf_files/shellfish_abstracts.pdf

Shrimp - Improvements in management controls at shrimp farms, and strict permitting guidelines for growing non-native species have reduced the level of concern with this industry. Even with improvements, environmental concerns still exist regarding potential impacts on water quality and transfer of disease to wild stocks.

Management Characterization

- 1. Identify significant changes in the state's ability to address the planning for and siting of aquaculture facilities since the last Assessment (new regulations, guidance, manuals, etc.). Provide the following information for each change:**
 - Characterize the scope of the change
 - Describe recent trends
 - Identify impediments to addressing the change
 - Identify successes

Aquaculture Enabling Act - In June 2003, the Aquaculture Enabling Act was passed, providing for new opportunities for aquaculture development in South Carolina. The legislation improved the state's regulatory authority over aquaculture development, including much needed controls on importation of live aquatic organisms into the state. The legislation requires aquaculture permits that will help to protect water resources, critical habitats, ecosystems and the health of the natural resources. Although this legislation does not apply to saltwater species, it is applicable to industries within the coastal zone that may culture hybrid or freshwater species.

The legislation improves controls over freshwater gamefish imported into South Carolina for stocking in private ponds. Previously, there was no control over the health status of these fish, their genetic makeup or the conditions in which they were reared. New laws require a permit to import fish, and it places controls on growers of stocks that are incompatible for release into South Carolina's waters.

Shellfish - In 2000, new laws were passed making it optional for clam mariculture operations to report mariculture landing. Maricultured clams are now considered an agricultural product rather than a fishery product. This change is evident in recent drops in official reports on clam harvests, impacting the state's ability to report trends in mariculture activities (SC Shellfish Management Plan, 2005).

Shrimp - New management improvements have been implemented at shrimp farms to address disease concerns. The amount of water exchanged from ponds to natural systems has been decreased, as well as the number of animals stocked per pond. Finer mesh screens have been installed in water pipes to reduce the introduction of pathogens and predators, and discharge pipes have been double-screened to prevent release of farm shrimp into the wild.

Additionally, DNR has implemented strict permitting guidelines for farms growing non-native shrimp. Farmers must provide extensive operations plans, and DNR officials perform site visits to ensure that the plans are being followed. If a virus is found, farmers must follow tougher rules for testing, confinement, and destruction of animals. Farmers are required to buy virus-free young shrimp only from hatcheries that pass testing standards established by the U.S. Marine Shrimp Farming Program.

Conclusion

- 1. Identify priority needs or major gaps in addressing the programmatic objectives for this enhancement area that could be addressed through a 309 Strategy.**

A meeting of stakeholders and staff resulted in the identification of gaps in addressing the issue of aquaculture siting within the coastal zone. Important shellfish habitats should be mapped for use in making permitting decisions when siting facilities or approving mariculture permit areas.

2. What priority was this area previously and what priority is it now for developing a 309 Strategy and designating 309 funding and why?

<u>Last Assessment</u>	<u>This Assessment</u>
High _____	High _____
Medium _____	Medium _____
Low <u> X </u>	Low <u> X </u>

Although minimizing cumulative impacts and addressing land lease issues associated with aquaculture activities continues to be a management priority, 309 funding will not be sought to implement potential program efforts under this enhancement area.